Inter- and intraindividual differences in empathy-response to Covid-19 related moral dilemmas

By

Kathrin Bartsch

Supervisors: Anneke Sools and Yashar Saghai

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Abstract

The Covid-19 pandemic confronted people with unfamiliar moral issues, such as: Should quarantine instructions be followed if it means sacrificing the collective well-being? Or how do we approach people who encounter us with contradictory facts and opinions about Covid-19? This qualitative study explored inter- and intraindividual differences in empathy-response over time when repeatedly asked to engage in Covid-19 related moral dilemmas. Therefore, a closer look at the present state of empathy research is provided. Out of an existing data set of responses on Covid-19 related moral dilemmas, a sample of twenty participants was chosen from different participants resident in the Netherlands, Finland, Ecuador, and Greece. Survey responses were analyzed inductively and deductively by thematic analysis that led to the distinction of four facets of empathy: 1) affective empathy, 2) cognitive empathy, 3) expressed empathy, and 4) future-self empathy. Hereby, the facets 'cognitive empathy', 'affective empathy' and 'expressed empathy' could be found in different depth among the participants. Consequently, the levels high, medium and low emerged. With each level, the effort and depth with which a person tried to use empathy to understand how another person feels, thinks, or behaves increased. Unlike the four empathy facets, it was also possible to discover a form of 'antipathy'. Overall, the empathy facets ‘low cognitive empathy' and medium cognitive empathy' were used most when asked to engage in Covid-19 related moral dilemmas. Interestingly, findings highlighted that there are inter- and intraindividual differences. Thus, participants showed to apply multiple facets of empathy parallel or at least within the same dilemma. Additionally, participants used different empathy facets depending on the dilemma they faced. Furthermore, this study has proven that some individuals show a higher degree of empathy than others. However, within this study, it was not possible to improve an individual's empathy capacity. Thus, according to our finding's empathy is not trainable. This study contributes significantly to understanding empathy as a multidimensional construct and provides a sound basis for future projects.

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1. Introduction

The Corona pandemic in the spring of 2020 required restrictions that subjected the population to a physical contact ban - including the closure of public facilities and private recreational-, sporting-, cultural-, and religious activities (e.g., religious services, funerals) (Glyniadaki, 2020; Heuling, 2020; Neves, Bitencourt, Bitencourt, 2020). People were confronted with unfamiliar moral issues, such as: Should quarantine instructions be followed if it means sacrificing the collective well-being? Should we go to work or school if it means jeopardizing the health of our loved ones? May we embrace grieving relatives at the funeral of a loved one if they wish so? But also, how do we approach people who confront us with contradictory facts and opinions about Covid-19? All these questions are moral dilemmas that many people face in the time of the Covid-19 pandemic. Moreover, these questions need empathic engagement for a person to be able to answer them for him or herself.

Therefore, this dissertation aims to explore a person's empathy-response over time when repeatedly asked to engage in Covid-19 related moral dilemmas. In order to achieve this study goal, it is necessary to take a closer look at the present state of empathy research. For this purpose, the definition of a moral dilemma and moral imagination must be explored. Therefore, it is of great importance to understand the connection between moral dilemmas and moral imagination. Furthermore, moral imagination plays a vital role in developing empathy which must be elaborated on to achieve the study's overall goal. Finally, the multidimensional construct of empathy will be explored more closely in the annex of the current state of the art.

1.1 Moral Dilemmas and Moral Imagination

In general, an individual embodies several sets of values and norms that can be in harmony and sometimes contradict each other. Values do not always fit together in perfect harmony; they often coexist in tension and sometimes even conflict. This is most evident when confronted with moral dilemmas (Hitlin & Vaisey 2013). There are different conceptualizations for the term moral dilemma. This paper will refer to the most important and frequently mentioned elements or implications of the conceptualization of a moral dilemma. Accordingly, a *moral dilemma* is a challenging situation where there is no clear "right" or "wrong" action to do because there are no absolute rules of precedence. Thus, there is no alternative to satisfy both obligations.

Some people might perceive a moral dilemma as a black and white condition, while others perceive it as more than two options (Van Baarda & Verweij 2009; Mazza et al., 2020). However, in this study, we refer to moral dilemmas as a complex moral problem in which one or more actions are seen as right or preferred, but there is a conflict of obligations or values. Since we assume in the Covid-19 related dilemmas presented that several actions could be considered morally preferable, it is possible to resolve the conflict.

Furthermore, the term *anticipatory moral dilemma* refers to emerging moral dilemmas that might occur in the future. Because the individual is not directly faced with the dilemma, imagination is needed to engage with the dilemma (University of Twente, 2020). An example of an anticipatory moral dilemma would be the vaccination situation in the year 2025 and the question of whether people who are not vaccinated are allowed to go shopping under the same conditions as people who are vaccinated.

Yet, *moral imagination* enables an individual to include the perspective of another person. It is the ability to imagine how someone else might experience a situation and how such different situations can develop based on different values, beliefs, motivations, virtues, and principles (Fesmire, 2003). In his book "Moral Imagination", Mark Johnson (1993) writes:

> "Imagination is the means by which we are able to conceive of alternative perspectives and to explore their implications for action, relationships, and communal well-being. Thus, the very possibility of taking a critical stance toward a particular viewpoint depends on our imaginative ability to envision other viewpoints (p. 209)."

Again, referring to the previous example, moral imagination helps us to put ourselves in the position of a vaccinated person in the year 2025 and the position of a revaccinated person in the year 2025. However, to date, moral imagination is a sparsely studied topic that lacks established empirical studies, both because there is no consensus on a precise definition of moral imagination in the literature and because of centuries of neglect in moral philosophy and psychology (Samuelson, 2007).

1.2 Theoretical Background: Facets of Empathy

The wealth of empirical evidence from developmental, behavioral, and social neuroscience reveals a complex relationship between moral imagination and empathy (Decety, Batson, 2009; Hamlin, 2014; Young, Dungan, 2012; van Dongen, 2020). From the current state of research, it is evident that it takes imagination to experience the thoughts and emotions of others since a person can only experience his or her own thoughts and emotions. Additionally, empathy is fundamental to develop moral behavior (Eisenberg, Eggum, 2009). For example, studies with healthy participants and patients with neurological damage show that utilitarian judgments are expedited by a lack of empathy (Decety, Cowell, 2014).

However, there are also opposing opinions claiming that one does not need empathy to act morally, and that empathy can even be an obstacle to moral behavior, since it may lead to more partiality, for example, by favoring relatives and friends (Batson, Klein, Highberger, Shaw, 1995).

Yet, there is no clear stringency in the research literature on operationalizing empathy (Clark 1980; Coll et al. 2017; Alma & Smaling 2016). While some see empathy as the ability to read or feel connected to their fellow human being, others see empathy as a moral stance that drives one to care for others. Even with the conceptual confusion, most people see empathy as understanding what other people are experiencing and caring about them (Fisher, 2020). Sometimes, empathy is used interchangeably with the terms compassion and sympathy in the literature. The difference, however, is that empathy can be not only other-oriented (e.g., by showing empathic concern) but also self-oriented (e.g., responding with emotional distress) (Batson, 2009; Decety 2010).

Cuff et al. (2016) examined 43 different definitions of empathy from a wide variety of research areas, such as social neuroscience (e.g., Decety and Lamm, 2006) and developmental psychology (e.g., Feshbach 1975; Hoffman 1977). The result of their thematic analysis was that empathy is a multidimensional construct that can be broken down into an *affective* and a *cognitive* component (Davis 1983; Smith 2006). The affective component allows individuals to feel an emotion similar to that of another person ("I feel what you feel"). In contrast, the cognitive component enables one to generate a mental representation of oneself in order to understand the thoughts and emotions of others from their perspective through perspective taking and Theory of

Mind (ToM) (Smith 2006; Mai et al., 2016). Thus, cognitive empathy is recognizing mental states but not the sharing of feelings (de Waal, 2008). Many researchers are convinced that ToM is strongly related to cognitive empathy (Eslinger, 1998; Shamay-Tsoory et al., 2003). Blair (2005) even claims that cognitive empathy and ToM are the same systems. In this regard, ToM is the ability to attribute mental states (such as intentions, desires, or beliefs) to oneself or others (e.g., Wellman, Fang, & Peterson, 2011; Wellman, Liu, 2004; Frith and Happé, 1999). Therefore, ToM and cognitive empathy are conceptually overlapping (Mai et al., 2016).

Also, neuroimage studies support the thesis that empathy is a multidimensional construct because affective empathy and cognitive empathy involve different neural pathways and temporal activation patterns. Accordingly, EEG studies show early emotional involvement in empathy-inducing situations (increased activity in the frontal lobe at 140 ms stimulus onset), followed by later cognitive involvement (activity over the central parietal region at 380 ms after increased activity in the frontal lobe at 140 ms stimulus onset) (e.g., Fan and Han 2008).

In addition, fMRI studies show that empathy-triggering situations activate the limbic system and the medial prefrontal cortex (MPFC). These findings have shown that a higher level of self-reported experienced empathy is associated with greater activity in the MPFC. Moreover, activity in empathy-related areas, particularly in the MPFC, was correlated higher in empathy-triggering conditions than in the contrasted stress condition, indicating that empathy is a conscious experience (Rameson et al., 2012).

Morelli and Liebermann (2013) reported similar results showing that empathy selectively activates regions for negative (pain) and positive (happiness) emotions. Thus, increased activation was found in the anterior insula (AI) and dorsal anterior cingulate cortex (dACC) that triggered a negative emotion in context-independent situations. In comparison, the dorsal medial prefrontal cortex (DMPFC) and the MPFC showed an increased activation once participants were asked to mentally evaluate the contexts of the events for empathic responses. These results have shown that empathy is not an automatic and unidimensional construct but rather a conscious and multidimensional construct.

Since there are many available definitions of empathy, we draw on Alma and Smaling's (2016) comprehensive conceptualization of empathy since the authors conceptualize empathy not solely as pure psychological identification and but highlight

the importance of imagination. Accordingly, empathy is "the ability of placing oneself imaginatively in another's experiential world while feeling into her or his experiences (points of view, thoughts, ideas, cognitions, desires, intentions to act, motivations, feelings, and emotions)" (Alma & Smaling, 2016).

To further explore the construct of empathy, Van Striens (1999) and Alma & Smaling (2016) stated five facets of empathy. Hence, *affective empathy* or empathic resonance is the first facet. It requires the emphasizer to step into the experimental world the empathizee ("as-if" mode). Secondly, *cognitive empathy* is defined as analyzing and interpreting another person's perceived affective experiential world and behaviors. *Expressed empathy* represents the third facet. Through nonverbal or verbal communication, the empathizer expresses his or her experienced empathy to the interlocutor. Next, *received empathy*, the interlocutor or empathizee must acknowledge the empathy received. Received empathy is often referred to as responsivity ("responsive empathy"), which is necessary to create a good relationship between the empathizer and the empathizee. The last facet represents *interactional empathy*. It involves the interactive process between the empathizer and the empathizee. Interactional empathy is an interaction in which empathic understanding is communicated, received, acknowledged, affirmed, and stimulated (Alman & Smaling, 2016; Van Strien, 1999). Alma and Smaling (2016) extend these five facets of van Strien (1999) with another facet: *interpretive empathy*. Interpretive empathy implies that the empathizer must reflect, verify, and validate the empathizee's verbal and nonverbal behavior. It is a process of understanding and interpreting by challenging the empathizer's pre-understandings or pre-assumption and requires that the empathizer includes social, cultural, and historical aspects in the interpretive process. Consequently, this process of understanding, interpreting, and validation stimulates the empathizer's self-enlightenment, self-understanding, and self-development (Alma & Smaling, 2016). In summary, there are different facets of empathy; the mental empathy facets included affective-, cognitive-, and interpretive empathy, whereas the social empathy facets include expressed-, received-, and interactional empathy. However, is an individual able to change the quality of their empathic capacity?

1.3 Cultivating Empathy

The concept of empathy has gained much attention over the past few years, and there is a growing consensus that empathy can be cultivated through moral imagination (Fesmire, 1994). According to Nussbaum (1997), we can cultivate our imagination through the arts of opening our minds to alternative possibilities and ways of thinking. Narratives, such as stories about the lives of others, have the power to open our minds through imagination. In doing so, we become aware that people are thinking and acting differently or living in different circumstances than the reader does (Nussbaum, 1997, p. 88; English, 2016). Narratives can help an individual to gain an empathic perspective. By engaging in art, our imagination is stimulated, and we become aware of things beyond our immediate perception and beyond what our everyday experience offers. Especially artworks that "unsettle" and "disturb" our sensibilities can unveil to our characters with a "rich inner life" that we might not typically have access to (Nussbaum, 1997, p. 100).

Nussbaum (1997) describes a particular kind of confrontation with the difference that helps us think beyond what we know and consider new possibilities imaginatively. To develop empathy, a person needs to include the possibility of being wrong. This recognition that we are fallible is a painful process because it makes us vulnerable. Nevertheless, recognizing this fact is a prerequisite for developing empathy. Accordingly, we gain an understanding of the fact that things can be hidden from our view. Considering that people have different ways of seeing the world, this awareness can broaden one's view or counteract it productively. Therefore, one creates an opportunity for learning from the other (English, 2016; Nussbaum, 1997).

In a literature review on moral imagination, Samuelson (2007) concluded that people could train their empathy skills by practicing an individual's moral imagination skills. Accordingly, the best method to enhance an individual's empathy skills is to present moral dilemmas and ask an individual to elaborate on these dilemmas, for example, by asking individuals to present proposed solutions to resolve a dilemma (Samuelson, 2007). While there is little research on using visual moral dilemmas as a methodology to study empathy, studies have proven that iconic images have the power to stir emotions and change people's perspectives on life. A good example of the powerful effect of images is the photo of the Syrian child Alan Shenu that was viewed by more than 20 million people on social media and covered the front pages of

newspapers on September 2, 2015 (Vis, Goriunova, 2015; Slovic, Västfjäll, Erlandsson, Gregory, 2017). The photo showed a child lying face down on a Turkish beach. This single picture raised attention to the hundreds of thousands of dead and millions of refugees as a result of the Syrian civil war. And psychological research confirms the greater impact of images over statistics and metrics (Slovic, Västfjäll, Erlandsson, Gregory, 2017).

Nevertheless, other studies show that extending empathy to abstract strangers is a challenge for the human brain. For example, the concept of "oikeiōsis" shows that empathy and affinity for other individuals increases as their proximity in our lives increases (Fisher, 2020). Suppose the strength of empathy is related to how connected an individual feels to another character. In that case, we can assume in this study that there will be differences in the quality of empathy, especially since we are addressing various issues of the Covid-19 pandemic in the dilemmas. Thus, some participants will feel more connected to the characters depicted in the dilemmas than other participants.

In this context, this dissertation aims to use moral dilemmas pictorially to explore how individuals apply empathy in different morally challenging situations. Accordingly, we expect that pictorially represented Covid-19 dilemmas are a good method to investigate individual- and intraindividual differences and changes in empathy.

1.4 Study Objective

Empathy research is still in its infancy, and empirical studies are lacking. Although there is a definitional disagreement, assumptions regarding the importance of empathy are pervasive. Individuals with high empathy are supposed to understand how other people feel ('cognitive empathy') and experience their emotions vicariously ('affective empathy'). They are able to express empathy ('expressed empathy') and receive empathy ('received empathy'). High empathy individuals use their self-understanding and presumptions to interpret and verify others' feelings and thus enhance their self-development and self-enlightenment ('interpretive empathy') (Alma, Smaling, 2016). Consequently, empathy is an investigative tool that allows individuals to gather multiple pieces of information through different empathy facets and their neural processes. Individuals with high empathy are thought to use this information to alleviate the suffering of others and avoid potentially harmful behavior, whereas individuals with

low empathy cannot use such information to guide their behavior (Vachon, Lynam, 2016).

However, neurological findings also indicate that empathy can also have its downsides. According to this, when people observed others in pain, their brain activity is partially reflected in regions associated with pain. This may be an evolutionary adaptation that helps us predict how pain will affect us. Although this shared suffering can sometimes have negative effects, for example, in the worst cases, a person may experience "emphatic distress," which leads to feelings of helplessness, withdrawal, and apathy. This adaptation can also help determine how much pain affects us and protects us from perceiving too much pain from the other person (Fisher, 2020). Accordingly, it can be expected that there are inter- and intraindividual differences in how much empathy a person shows.

While empathy is considered indispensable for human coexistence and might serve different functions, there is currently no scientific research that incorporates the media discourse, global relevance, and both present and future moral challenges of the Covid-19 pandemic. And this despite the fact that there is scientific evidence revealing that the Covid-19 pandemic is causing psychological distress for a large segment of the population, where empathy might serve different purposes, such as conveying a feeling of warmth. Additionally, there are hardly any studies that examine how different people use empathy when faced with different Covid-19 related moral dilemmas.

In this context, this dissertation aims to use figurative moral dilemmas to explore how individuals apply empathy in different morally challenging situations. Acknowledging such a gap in the literature will allow us to address the following research questions:

1) Which empathy facets are used and in what proportion do individuals apply each empathy facets when asked to engage in Covid-19 related moral dilemmas?
2) Are there inter-and intraindividual differences in how individuals use empathy?
    a) Do individuals use different empathy facets when faced with a new Covid-19 related moral dilemma?
    b) Do some individuals show a higher degree of empathy than others?
    c) Does empathy increase or decrease when individuals are asked to empathize with different dilemmas?

2. Methods

2.1 Background

This study is a follow-up study based on an existing dataset by researchers at the University of Twente. In order to provide an overview, all three studies are summarized in the following. The first study was conducted in April 2020 and included a single qualitative measurement. Participants were invited to envision their future perspectives on a desired post-Corona future. The participants' visions were captured through narratives. The second study included a quantitative survey with two measurement points in August and November 2020. Participants were asked to complete a pre-and post-online survey. The survey aimed to collect data about what respondents expected to happen, their hopes, and fears once the Covid-19 pandemic is over. The survey questions concerned open text boxes and multiple-choice questions. The third study consisted of willing participants from the previous studies and was carried out between September and December 2020. Participants were asked to complete four online surveys at four different measurement points with an interval of three to four weeks. Participants were invited to complete two tasks per survey, one task about a personal moral dilemma and one task about a collective moral dilemma that might emerge as a consequence of the Covid-19 crisis. The data set of the third study was used for the present study.

2.2 Design

A cross-sectional online survey design has been used to assess the empathy response to Covid-19-related moral dilemmas. Thus, this study design is based initially on the Thematic Apperception Test (TAT), a systematic approach to storytelling. The rationale behind the Covid-19-related moral dilemmas is that the participant's interpretation of what happens in the illustrated scene illuminates the participant's empathy capacity. Thus, the aim is to compare participants' responses to drawings to see whether empathy changes. Since participants gain more experience through each survey and the related illustration of a moral dilemma, there is the possibility of variance in empathy.

2.3 Participants

The main inclusion criteria were:

- age above 16
- sufficient language skills (English or other languages included in the study)
- participants must live in the regions included in the study (Netherlands, Ecuador, Finland, Greece)

The third subset relevant for this research answered 34 participants out of 83, with an international scope composed of individuals living in countries affected by the current Covid-19 outbreak, such as the Netherlands, Ecuador, Finland, and Greece. The age was between 17 and 77, with a mean age of 43, with 55% of the participants having a bachelor's or master's degree. A heterogeneous sample was recruited via the researchers' network systems through convenience sampling. Participants involved in the third study received a 15 euros voucher per survey completed, for a total of 60 euros.

2.4 Materials

The present study used existing data from the previous study about anticipated Covid-19 related moral dilemmas. Therefore, the participants' demographics, eight drawings of moral dilemmas created explicitly by an artist of the project, and four surveys completed by participants who volunteered were used.

The drawings depicted emerging or anticipatory moral dilemmas arising as a consequence of the current Covid-19 situation. For example, one drawing showed a funeral situation in times of Covid-19, where some people keep their distance from each other and wear masks. In contrast, other people embrace each other and give each other comfort (Figure 1, see Appendix A). Another drawing depicted the current home office situation, where parents and children try to manage work and family while living together in a small space (Figure 2, see Appendix A). Additionally, futuristic drawings, such as a drawing titled "2030," were also included (Figure 3, see Appendix A). The drawing shows a dystopian world that suffers from the consequences of the Covid-19 pandemic and the climate crisis.

Regarding the survey, each survey addressed one personal (e.g., a funeral) and one collective dilemma (e.g., home office situation), with an array of four to five questions per dilemma at four measurement points (Table 1, see Appendix A). A personal dilemma always referred to the personal lives and experiences of an individual

(e.g., "Suppose you were either a very close member of the decreased person or a mere acquaintance, what do you think you should do then?"). In contrast, a collective dilemma required the participant to imagine taking on the role of a law enforcement officer, for example, the police, or to imagine a collective, social problem that might impact their personal life (e.g., "Suppose you were an appointed advisor to the government on a policy regarding remote education and homeschooling during the coronavirus crisis. Try to make explicit as many moral dilemmas as you can.").

Each of the four to five questions asked served a specific function. The first survey question was an open narrative-pointed question based on the Visual Thinking Strategy method ("1. Could you describe what is happening in the picture? What is the situation? Who are the characters? What do they do, think, or feel?"). Therefore, the first question aimed to see the participant's interpretations of whether they thought there was a moral dilemma in the first place, how the dilemma looked like, and whether the participant revealed one single dilemma or perhaps multiple dilemmas. The remaining four questions each targeted an aspect considered to be essential for (anticipatory) moral imagination. Accordingly, question two was about moral sensitivity (e.g., "2. What are the moral dilemmas you think the characters are facing in the picture? Try to make explicit as many moral dilemmas as you can)". Next, the third question concerned action possibilities for dealing with the issue ("3. Given the moral dilemmas you have identified, what should the characters do in this situation? Try to imagine as many morally acceptable options as you can"). Question four was about moral salience (e.g., "4. Suppose you were to attend a funeral during the coronavirus crisis, what do you think you should do? Please make explicit the reasons for your choice."). Finally, question five concerned the construct of empathy by asking to imagine different backgrounds of the characters or the setting (e.g., "5. Suppose you were a very close family member of the deceased person or a mere acquaintance, what do you think you should do then? Please make explicit the reasons for your choice.").

2.5 Data Collection

In order to make a comparison between the survey responses for each dilemma and to see whether empathy improves, past survey responses were used and collated to be compared with each other.

2.6 Procedure

From September to December 2020, online surveys were available on Qualtrics. Each of the four measurement points consisted of two dilemmas and a questionnaire. The questionnaire was divided into two sets of questions. Four to five questions addressed a personal dilemma specifically, and four questions addressed a collective dilemma. In the first measurement in September 2020, the personal dilemma involved the situation at a funeral, whereas the collective dilemma dealt with the current homeschooling and home-office situation. In the second measurement, the personal dilemma represented a fictitious vaccination situation, and a situation concerning the economy was selected as the collective dilemma. The third measurement was conducted in November 2020 and dealt on the personal level with a domestic situation of two characters and on the collective level with a situation that takes place in a home for asylum seekers. The last measurement in December 2020 included on the personal level a situation in the year 2025 in which the life of different branches of action with varying types of Covid-19 viruses is depicted. On the collective level, a situation from the year 2030 in which the Covid-19 pandemic and the climate crisis are present. For each survey, a duration of one hour was calculated. To minimize the burden (e.g., stress, discomfort, inconvenience), participants had the chance to log out and withdraw from the study at any time.

To ensure that the data is stored safely and to minimize the risk, any identifying information was deleted before receiving the data from Qualtrics. Thus, no file with identifying information was stored on a computer or shared with partners. Before starting this follow-up study, the data was translated into the English language and transcripted into Word documents. Hence, a Word document was compiled containing each participant's answers which made up approximately three pages. The anonymized and translated Word documents were provided for this follow-up study via the Microsoft Teams platform to get further analyzed. The qualitative analysis was done via Atlas.ti and was further evaluated by two researchers. The data were further processed in IBM Spss and Excel after the coding process. To summarize, this study is based on an existing data set of the past study. Therefore, the generated qualitative data set was reviewed and re-assessed for answering the follow-up research questions.

2.7 Data analysis

2.7.1 Qualitative Data Analysis

The existing data set was imported into Atlas.ti. Participants who did not confirm inclusion criteria were already removed in the previous study. In addition, participants' data were removed from this study if they had incomplete data. Incomplete data means that participants were removed if they did not provide answers for more than two dilemmas. In order to avoid skewing the results, 14 participants were removed from the study.

Next, the survey responses were analyzed inductively and deductively by thematic analysis to answer the research questions. Therefore, the deductive approach was based on the six facets proposed by Alma and Smaling (2016) and Van Strien (1999) (see Section 1.2). Based on the earlier presented six facets, the facets cognitive-, affective-, and expressed empathy have been adopted from the literature. In addition, the facet interpretive empathy was identified in the analysis. However, in this study, it was assigned to the empathy facet 'high cognitive empathy'. Since it was concluded that the facet interpretive empathy is a type of heightened cognitive empathy. The social facets received empathy and interactional empathy were omitted because they could not be identified in the existing data set.

After reviewing the material, four main facets of empathy were established: 1) affective empathy, 2) cognitive empathy, 3) expressed empathy, and 4) future-self empathy. The facets 'cognitive empathy', 'affective empathy' and 'expressed empathy' could be found in different depths among the participants. Consequently, the levels high, medium and low emerged. Unlike the four empathy facets, it was also possible to discover a form of 'antipathy', Overall, this resulted in 11 different codes being used.

Table 1 shows a summary of the coding scheme. This overview of the coding scheme shows the 11 different codes agreed upon in the inductive analysis. Together with a description, key characteristics, and a citation, it should be comprehensible how the coding process was carried out.

The main facet 'cognitive empathy' was divided into three subcategories: 'low cognitive empathy', 'medium cognitive empathy', and 'high cognitive empathy'. The code 'low cognitive empathy' describes the pure change of perspective. The participant described the situation from the characters' point of view. Thus, it is a more pragmatic

form of empathy in which the participant merely described the emotions or thoughts of a participant (e.g., "He thinks he has to hang up because he has a lot of worries at home."). The code 'medium cognitive empathy' relates to the analysis and interpretation of the perceived affective world or behavior of a character. The participant used a descriptive and factual approach. For example, the participant described thoughts or intentions that a character has or contextualizes the character's behavior into what is happening (e.g., It seems like an outsider to the situation that is only asking for help, and the man approaches to ask him to leave.."). The code 'high cognitive empathy' included a more elaborated understanding. The participant challenged his knowledge, beliefs, norms, and convictions to communicate, confirm, receive, or stimulate his empathic understanding (e.g., "[...] they have different points of view of the same situation and it can be hard to understand each other […] they can share what each of them is doing to deal with this crisis and how they are receiving information from TV [...] a balance between the two would be ideal because at the same time it is important to follow the news, also it is important to not worry too much [...] it can be horrible for her mental health.").

The main facet 'affective empathy' was divided into three subgroups: 'low affective empathy', 'medium affective empathy', and 'high affective empathy'. Hence, an individual showed 'low affective empathy' when naming the emotions (such as fear, anger, happiness, disgust) of a character in the represented dilemma (e.g., "most of them are sad, crying, and mourning for this situation."). 'Medium affective empathy' refers to the ability of the participant to emotionally empathize with the character of the image ("as-if mode"). The participant puts himself in the place of one of the depicted characters (e.g., "If I were a close relative, I would feel very sad and sorry for having the need to attend."). 'High affective empathy' is even more developed. The participant engaged even more with the character's emotions. The participant is immersed and uses his imagination to feel in the experimental world and with the character (e.g., "Loneliness, even though people are in the same room.").

Moreover, the main facet 'expressed empathy' has been divided into three subcategories. At the lowest level, 'low expressed empathy' describes the verbal communication of empathy. The participant expressed concern and communicated empathy (e.g., "Virtually all sectors of production need support."). 'Medium expressed empathy' describes a more pronounced form of empathy expressed by the participant. By being part of the scenario, the participant described how he would express empathy

in more detail. The participant can do this either verbally or by reflecting emotions of the character (e.g., "[…] asylums or stays for migrants are not adequate and sufficient, although international organizations are supporting this problem, there are no real solutions or effective support that in one way or another improve the living conditions of this population that arrives".). 'Highly expressed empathy' differs in that the participant actively expressed empathy and showed a motivation to act. The participant imaginatively put himself into the scenario and tried to express empathy as part of the scene (e.g., "I will ask them first [...] perhaps I will avoid approaching older people. I will probably apply an alternative hugging style I have found where I rest my head on the other person's back rather than on their shoulder.").

Furthermore, the facet 'antipathy' can be understood as the opposite of empathy. The participant did not empathize with the characters and the scenario or showed aversion towards the characters (e.g., "How can someone be so stupid"). The facet 'future-self empathy' refers to the participant who puts himself into the scenario and sees himself as part of the action himself. The participant thus imagined what he would do in the future if he would face the moral dilemma presented himself (e.g., I would explain why I do it and look for other ways to express my sadness, grief, love, and support to those around me.").

Different researchers carried out the revision of categories and coding agenda as a formative check of reliability. In addition, boundaries were set for the coding scheme. Overall, a statement was not coded as empathic if the participant could not take the perspective of a character. For example, if an emotion (e.g., sadness instead of joy) or intention was attributed to the character that did not fit the content of the expression or event in a dilemma (e.g., "Someone was guilty of someone else's death."). Also, no statements were coded where the participant spoke solely about their own experiences without referring to a character in a dilemma (e.g., "It happened to me to attend a memorial service."). In addition, social or political attitudes were not coded as emphatic when they did not make an emphatic reference to a character in the picture (e.g., "Politicians will steal all the money as always.") Statements were also not coded as empathic if the participant did not show motivation to take a different perspective (e.g., "I do not know. I don't decide what the other person does or thinks.").

Table 1

An overview of the coding scheme with a total of 11 facets. Presented with a description, key characteristics and a quote representing the respective codes.

Code	Definition	Key characteristic	Example
Low cognitive empathy	Description of emotions or thoughts	- Descriptive - Barely elaborated understanding	*He thinks he has to hang up because he has a lot of worries at home.*
Medium cognitive empathy	Analysis and interpretation of the perceived affective world or behavior of a character	- Descriptive - Elaborated understanding	*It seems like an outsider to the situation that is only asking for help and the man approaches to ask him to leave…*
High cognitive empathy	Challenging of knowledge, beliefs, norms, and convictions to communicate, confirm, receive, or stimulate own empathic understanding	- Descriptive - Highly elaborated understanding - Interpretive	*[...] they have different points of view of the same situation, and it can be hard to understand each other […] they can share what each of them is doing to deal with this crisis and how they are receiving information from TV [...] a balance between the two would be ideal because at the same time it is important to follow the news, also it is important to not worry too much [...] it can be horrible for her mental health.*
Low affective empathy	Naming emotions (e.g., fear, anger, happiness, disgust)	- Barely emotionally involved rather descriptive	*Most of them are sad, crying, and mourning for this situation.*

Medium affective empathy	Putting oneself in the place of one of the depicted characters	-	Emotionally involved "As-if" mode	*If I were a close relative, I would feel very sad and sorry for having the need to attend.*
High affective empathy	Being immersed in the experimental world to feel with the character	-	Emotionally highly involved Feeling "with" the character Imaginative	*Loneliness, even though people are in the same room.*
Low expressed empathy	Verbally communicating empathy	-	Little empathy expressed Barely elaborated	*Virtually all sectors of production need support.*
Medium expressed empathy	Being part of the scenario and description about how one would express empathy	-	More pronounced verbally or by reflecting emotions Elaborated	*[…] asylums or stays for migrants are not adequate and sufficient, although international organizations are supporting this problem, there are no real solutions or effective support that in one way or another improve the living conditions of this population that arrives.*
High expressed empathy	Putting oneself in the scenario, expressing empathy/ showing a motivation to act	-	Motivation to act Highly Elaborated Imaginative creates an action plan	*I will ask them first [...] perhaps I will avoid approaching older people. I will probably apply an alternative hugging style I have found where I rest my head on the other person's back rather than on their shoulder.*
Antipathy	Not empathizing with the characters and	-	Opposite of empathy	*How can someone be so stupid?*

	the scenario / showed aversion towards the characters			
Future-self empathy	Putting oneself into the scenario and consider oneself as a character of the scenario yourself .	-	Imaginative form of empathy because of placing oneself in the future	*I would explain why I do it and look for other ways to express my sadness, grief, love, and support to those around me.*

2.7.2 Quantitative Data Analysis

Secondary descriptive statistics, such as the participants' age, gender, and nationality were taken over and imported into SPSS version 24 and Excel. In order to see which empathy facets were used and in what proportion, first, the total score and the average were calculated for each code. In addition, paired sample t-test analyses were performed to show significant differences in the quality of the empathy facets between the four measurements. Therefore, the outcomes of the analysis are significant at a p-value <.05. In addition, to further explore significant values explored in the t-test analysis, a distinction was made between Personal and Collective Dilemmas by determining average values and their standard deviations. Moreover, to identify intra-individual differences, the empathy trajectories of the 20 participants were visualized and examined for differences and similarities and then grouped.

3. Results

After analyzing the existing data, 20 participants were included in the data set, and 14 participants were excluded beforehand due to incomplete data. 16 (80%) of the 20 participants were female, and four (20%) participants were male with an average age of 37.7 years. Participants represented four different nationalities. Accordingly, four participants were Dutch (20%), six were Greek (30%), two were Finnish (10%), and seven participants were from Ecuador (35%), as displayed in Table 2.

Table 2

Overview of Participant Characteristics

Characteristic	Total Sample N=20
Gender	
N (%) Female	N=16 (80)
N (%) Male	N=4 (20)
Mean Age in Years (sd)	39,7 (12,66)
Nationality	
N(%) Dutch	4 (20)
N(%) Greek	6 (30)
N(%) Finnish	2 (10)
N(%) Ecuador	7 (35)

3.1 Interindividual Differences among the Four Measurement Points

Table 3 gives the frequency distribution of the different codes. A total of 11 different empathy codes were identified, which can be grouped under the following head categories: 'cognitive empathy', 'affective empathy', 'expressed empathy', 'antipathy', and 'future-self empathy'. Regarding all four measurement points, a total of 815 codes were distributed. The 'cognitive empathy' domain was identified most frequently with 480 codes. The evaluation also shows that the empathy facet 'medium cognitive empathy' was coded most frequently with 235 assigned codes. In addition, most codes for the cognitive empathy domain were distributed during the first measurement point (157).

Going into more detail about *how* the 'cognitive empathy' domain was distributed, it can be stated that 'low cognitive empathy' was strongest during the first measurement point (74; m=3.7) (Table 3). This prevalence of 'low cognitive empathy' in the first measurement is confirmed by the paired sample t-test, as participants showed after the first measurement significantly less 'low cognitive empathy' in the subsequent measurement, $t(19) = 2.11$, $p = .048$ (Table 4, see Appendix B). Additionally, the empathy facet 'medium cognitive empathy' was observed most strongly during the first measurement (75; m=3.75). However, a significant decline in 'medium cognitive empathy' was measured from the third to the fourth measurement, $t(19) = 3.67$, $p = .002$ (Table 6, see Appendix B). As presented in Table 3, it is evident that the highest values for 'high cognitive empathy' were measured in the second measurement. The

paired t-test analysis supports this notably high value. Accordingly, there is a significant positive increase in ‘high cognitive empathy’ from the first to the second measurement, $t(19) = 3.27$, $p = .004$ (Table 4, see Appendix B), yet ‘high cognitive empathy’ decreases significantly in the third measurement, thus this empathy facet is used rather unsteady $t(19) = 2.80$, $p = .012$ (Table 5, see Appendix B). Overall, the fourth measurement point was assigned the fewest codes for the cognitive empathy domain (73).

By looking at the ‘affective empathy’ domain, it can be stated that most codes were assigned to the second measurement point with a total of 60 codes. Overall, the empathy facet ‘low affective empathy’ was detected most often (81). This can be attributed to the first measurement point, as ‘low affective empathy’ was used the most here (26; m=1.3). ‘Medium cognitive empathy’, however, was coded the strongest in the second measurement point (40; m=2.0). It is especially distinctive that the empathy domain ‘medium affective empathy’ increases significantly between the first and second measurement, $t(19) = -3.21$, $p = .005$ (Table 4, see Appendix B). Nevertheless, participants of the study showed significantly less ‘medium affective empathy’ in the following third measurement again ($t(19) = 5.34$, $p = .001$); thus, this empathy facet is used rather impermanently (Table 5, see Appendix B). Also noticeable is that ‘high affective empathy’ was used exclusively in the first measurement (12; m=0.6). This also explains the significant decrease in this empathy facet, from the first to the second measurement, $t(19) = 3.27$, $p = .004$ (Table 4, see Appendix B).

The empathy domain ‘expressed empathy’ was identified 71 times altogether. It was used most frequently in the second measurement point with 22 assigned codes. Among the most frequently used code was ‘low expressed empathy’ (36), with most of the codes being attributed to the first measurement point (13; m=0.65). ‘Medium expressed empathy’, on the other hand, was used most often in the second measurement (22). ‘High affective empathy’ has been distributed least frequently, with a total of 7 codes being distributed, of which four codes (m=0.4) can be attributed to the last measurement. The main category, ‘expressed empathy’, in the independent paired t-test analyses shows that this category has the lowest fluctuations among the measurements. Thus, the frequency with which participants used this category was very consistent (Table 4-6, see Appendix B).

The domain ‘antipathy’ was found 22 times within the four measurements, with the third measurement having the highest proportion of ‘antipathy’ codes (7; m=0.35).

Lastly, the code ‘future-self empathy’ was applied 77 times. Here it is noticeable that ‘future-self empathy’ was detected 40 times (m=2.0) in the fourth measurement. This pattern of high use in the fourth measurement also explains the significant increase observed from the third to the fourth measurement, t(19) = -6.43, p = .001 (Table 6, see Appendix B).

Table 3

Frequency of codes assigned in total per measurement point with mean scores

	M1	M2	M3	M4	Sum
Low cognitive empathy	74 (3.70)	48 (2.40)	49 (2.45)	37 (1.85)	208
Medium cognitive empathy	75 (3.75)	52 (2.60)	71 (3.55)	34 (1.70)	235
High cognitive empathy	8 (0.40)	20 (1.00)	7 (0.35)	2 (0.10)	37
Sum cognitive empathy domain	157	120	127	73	480
Low affective empathy	26 (1.30)	20 (1.00)	19 (0.95)	16 (0.80)	81
Medium affective empathy	15 (0.75)	40 (2.00)	4 (0.20)	13 (0.65)	72
High affective empathy	12 (0.60)	0 (0.00)	0 (0.00)	0 (0.00)	12
Sum affective empathy domain	53	60	23	29	165
Low expressed empathy	13 (0.65)	10 (0.50)	10 (0.50)	3 (0.15)	63
Medium expressed empathy	7 (0.35)	11 (0.55)	3 (0.15)	7 (0.35)	28
High expressed empathy	1 (0.05)	1 (0.05)	1 (0.05)	4 (0.20)	7
Sum expressed empathy domain	21	22	14	14	71
Antipathy	5 (0.25)	5 (0.25)	7 (0.35)	5 (0.25)	22
Future-self empathy	15 (0.75)	21 (1.05)	1 (0.05)	40 (2.00)	77
Total sum	482	430	336	277	815

M1 = first measurement; M2 = second measurement; M3 = third measurement; M4 = fourth measurement

The visualized representation corroborates the frequency distribution of the results presented (Figure 1, see Appendix B). Here it can be clearly observed that the empathy facets ‘low cognitive empathy’ and ‘medium cognitive empathy’ dominate, and this predominantly in the first three measurement points. Furthermore, it is also noticeable that ‘medium affective empathy’ was most strongly used within the second measurement and ‘future-self empathy’ most frequently within the fourth measurement. In contrast, ‘high affective empathy’ and ‘high expressed empathy’ was used relatively rarely.

3.2 Interindividual Differences among the Personal Dilemmas and Collective Dilemmas

In the following, the various measurement points will be addressed in detail by distinguishing between personal and collective dilemmas. This differentiation will help to elaborate on and possibly explain the results formerly presented.

3.2.1 Frequency Distribution of the Personal Dilemmas

Table 7 shows the frequency distribution of the empathy facets within the personal dilemmas, using the mean scores and standard deviations. Like the overall distribution, the facets ‘low cognitive empathy’ (m=1.7; sd=1.38) and ‘medium cognitive empathy’ (m=2.05; sd=2.01) were coded most frequently within the first measurement. Here, ‘medium cognitive empathy’ has the highest standard deviation from the mean (sd=2.01); thus, the fluctuations among individuals are more elevated than the other empathy facets. These are similar results to those explained in the paired sample t-test analysis performed one section earlier (see Section 3.1).

The frequency distribution for the main category ‘affective empathy’ closely follows the total distribution. The facet ‘medium affective empathy’ has the widest spread of values (m=1.30; sd=1.46). Again, these results are very similar to the previously confirmed t-test analysis outcomes explained one section earlier (see Section 3.1).

However, the empathy domain ‘expressed empathy’ represents a difference in the distribution. In contrast to the overall distribution, where ‘medium expressed empathy’ was most frequently used in the second measurement, it can be stated: looking

at the personal dilemmas, ‘medium expressed empathy’ was on average predominantly used in the first personal dilemma (m=0.30; sd=0.57). Moreover, the use of ‘high expressed empathy’ was balanced in the first, second, and fourth personal dilemma (m=0.05; sd=0.22), unequal to the overall frequency distribution, in which participants used this facet primarily in the fourth measurement (Figure 2, see Appendix B). Additionally, the domain ‘antipathy’ was most frequently detected within the first personal dilemma, which is also slightly different from the overall frequency distribution from before. (m=0.20; sd=0.52).

Table 7

Personal dilemma frequency distribution mean score and standard deviation

Personal Dilemma Mean Score (SD)				
	PD1	PD2	PD3	PD4
Low cognitive empathy	1.70 (1.38)	1.30 (1,34)	1.20 (0,89)	1.35 (1.14)
Medium cognitive empathy	2.05 (2.01)	1.25 (1,48)	1.55 (1,05)	0.75 (1.16)
High cognitive empathy	0.30 (0.66)	0.20 (0,52)	0.30 (0,57)	0.00 (0.00)
Low affective empathy	1.00 (0.65)	0.70 (0,87)	0.40 (0.60)	0.60 (0.88)
Medium affective emapthy	0.65 (0.88)	1.30 (1.46)	0.00 (0.00)	0.35 (0.75)
High affective empathy	0.30 (0.50)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Low expressed empathy	0.55 (0.50)	0.20 (0.52)	0.05 (0.22)	0.05 (0.22)
Medium expressed empathy	0.30 (0.57)	0.20 (0.41)	0.05 (0.22)	0.20 (0.52)
High expressed empathy	0.05 (0.22)	0.00 (0.00)	0.05 (0.22)	0.05 (0.22)
Antipathy	0.20 (0.52)	0.15 (0.49)	0.20 (0.41)	0.20 (0.41)
Future-self empathy	0.65 (0.75)	0.55 (0.61)	0.00 (0.00)	0.75 (0.56)

PD1 = first personal dilemma; PD2 = second personal dilemma; PD3 = third personal dilemma; PD4 = fourth personal dilemma

In general, except for the minor differences mentioned above, the graphical representations of the overall frequency distribution and the frequency distribution of the personal dilemmas look very similar (Figure 2, see Appendix B). This similarity

also becomes very apparent in the visual representation of the frequency distribution of the personal dilemma if one visually compares both graphs with each other.

3.2.2 Frequency Distribution of the Collective Dilemmas

Table 8 shows the frequency distribution of the codes assigned to the collective dilemmas. Beginning with the cognitive domain, it is noticeable that 'medium cognitive empathy' differs from the overall frequency distribution, as this empathy facet was on average found most frequently in the third collective dilemma (m=2.00; sd=1.30). This result is slightly different from the normal distribution. However, perhaps most striking is the sharp increase and relatively large variance from the 'low affective empathy' empathy facet in the second collective dilemma (m=4.05; sd=2.81). This strong dominance of 'low affective empathy' can be seen particularly clear when looking at the visualized frequency distribution in Figure 3 (see Appendix B). Also, the empathy facet, 'low expressed empathy', is slightly different from the overall frequency distribution, so this empathy facet was used most often in the third collective dilemma.

Table 8

Collective dilemma frequency distribution mean score and standard deviation

Collective Dilemma Mean Score (SD)				
	CD1	CD2	CD3	CD4
Low cognitive empathy	2.00 (1.78)	1.10 (1.90)	1.25 (1.21)	0.50 (0.76)
Medium cognitive empathy	1.70 (1.34)	1.35 (1.23)	2.00 (1.30)	0.95 (1.30)
High cognitive empathy	0.10 (0.45)	0.80 (0.83)	0.05 (0.22)	0.10 (0.22)
Low affective empathy	0.30 (0.47)	4.05 (2.81)	0.55 (0.95)	0.20 (0.95)
Medium affective empathy	0.10 (0.31)	0.70 (1.17)	0.20 (0.70)	0.30 (0.70)
High affective empathy	0.30 (0.57)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Low expressed empathy	0.10 (0.31)	0.30 (0.47)	0.45 (0.69)	0.10 (0.69)
Medium expressed empathy	0.05 (0.22)	0.35 (0.81)	0.10 (0.31)	0.15 (0.31)
High expressed empathy	0.00 (0.00)	0.05 (0.22)	0.00 (0.00)	0.00 (0.00)

Antipathy	0.05 (0.22)	0.10 (0.31)	0.15 (0.49)	0.05 (0.22)
Future-self empathy	0.10 (0.31)	0.50 (0.76)	0.05 (0.22)	1.25 (0.22)

CD1 = first collective dilemma; CD2 = second collective dilemma; CD3 = third collective dilemma; CD4 = fourth collective dilemma

3.3 Intraindividual Differences

In order to address the research question of whether there are intraindividual differences in empathy over time when repeatedly asked to engage with Covid-19 related moral dilemmas empathically, the empathy trajectories of all 20 participants were plotted using bar charts. In this context, commonalities and differentiating characteristics have emerged. Subsequently, four different categories came up, to which the individual participants can be assigned based on their empathy changes and quality during the eight dilemma presentations. In the following, the four categories are defined and represented by one participant from each group.

Participants in the first group show a **consistent low empathy trajectory with some peaks**. They exhibited moderate to weak empathy ratios and often used multiple empathy types when addressing the respective dilemmas. However, often ‘cognitive empathy’ is dominating. Overall, the empathy trajectories of 6 of the 20 participants were assigned to this category (Figure 8-12, see Appendix B). This category can be best represented by Individual 13 (Figure 4). The number of the respective codes is shown on the y-axis. For example, in the first personal dilemma, 'medium cognitive empathy' was coded five times. The x-axis, on the other hand, maps the different dilemmas. Thus, four measurement points are mapped, which in turn are divided into a personal dilemma (PD) and a collective dilemma (CD). Referring now again to the first category, Individual 13 shows consistent low empathy. However, especially in the first and second personal dilemmas, highs of ‘cognitive empathy’ become apparent in the empathy trajectory. And these peaks in the relatively low empathy course of Individual 13 are a particularly distinctive feature of the first group. In addition, Individual 13 demonstrates the dominant use of ‘cognitive empathy’, particularly in the first personal dilemma.

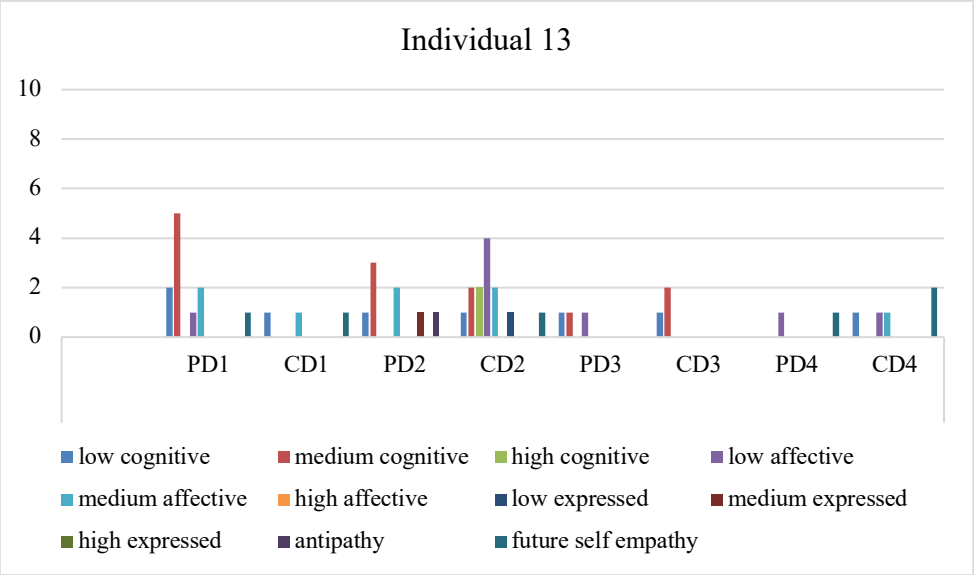

Figure 4. F*requency distribution of empathy facets using mean scores of Individual 13*

The second category includes participants whose trajectory plot shows a **slightly bell-shaped course** due to the relatively strong midfield. Nevertheless, like the first group, participants in the second course showed low to moderate empathy levels. Overall, the empathy trajectories of 5 of the 20 participants were assigned to this category (Figure 13-16, see Appendix B).

This group is presented by Individual 11. The bell-shaped structure can be observed very well in Individual 11 (Figure 5). Individual 11 shows a proportionally high level of 'low affective empathy'. Observing the progression, one notices that at the beginning (PD1, CD1), the participant shows a mild level of 'low affective empathy', which however increases during the second measurement (PD2, CD2), before it is barely recorded in measurement three (PD3, CD3) and measurement four (PD4, CD4). It can also be seen that several empathy facets are addressed simultaneously per dilemma. For example, in collective dilemma three, the participant makes use of four different empathy facets. Nevertheless, Individual 11 does not show an exceptionally high level of empathy overall.

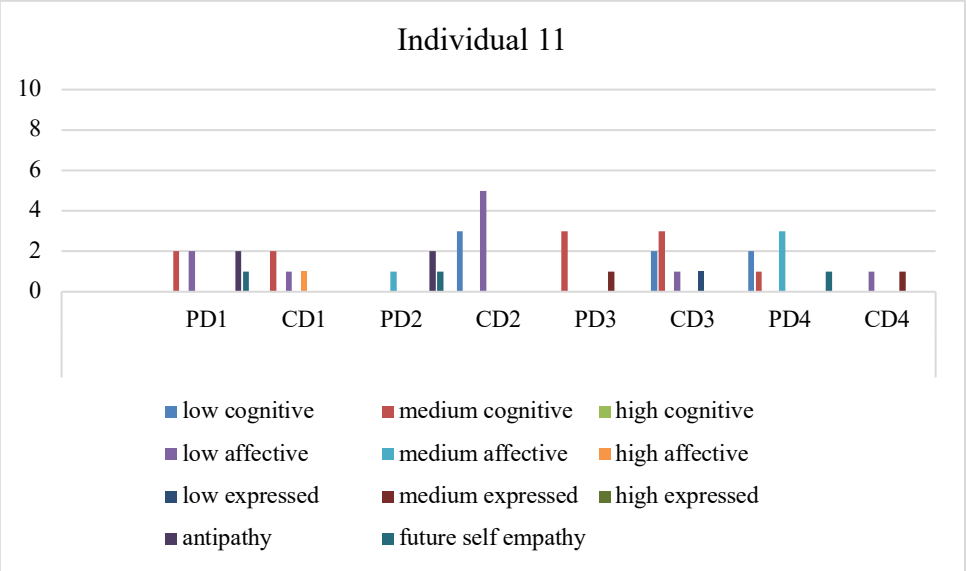

Figure 5. F*requency distribution of empathy facets using mean scores of Individual 11*

Participants in the third category show a **consistent low empathy trajectory**. Often, they do not have an empathy facet that dominates. While participants in this category use various facets of empathy, their distinctive feature is that very little empathy is used overall. Four of the 20 participants were assigned to the third group (Figure 17-19, see Appendix B). The group is represented by Individual 16. As shown in Figure 6, Individual 16 uses different empathy facets, especially in the first personal dilemma. Overall, however, Individual 16 shows very little empathy. Thus, Individual 16 never exceeds a score of three in an empathy facet.

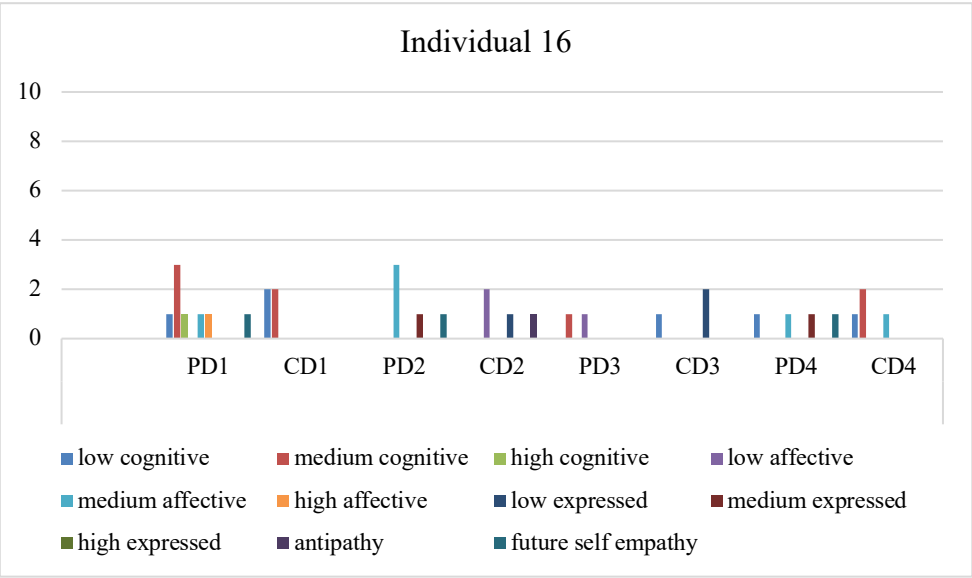

Figure 6. F*requency distribution of empathy facets using mean scores of Individual 16*

Finally, the fourth category includes participants who strongly distinguish themselves by their increased empathy capacity. Participants in this category exhibit clear dominant empathy types. Thus, participants who exhibited a moderate to strong empathy capacity were assigned to this category. Therefore, the last category includes the so-called '**Outliers**'. Overall, the empathy trajectories of 5 of the 20 participants were assigned to this category (Figure 20-23, see Appendix B).

The category is represented by Individual 4 (Figure 7). Individual 4 shows a high degree of empathy overall. The high values of the empathy facets 'low cognitive empathy' and 'medium cognitive empathy' are particularly striking. In addition, a dominant empathy facet often prevails throughout the eight dilemmas. This can be observed very precisely in the first three dilemmas (PD1, CD1, PD2), in which Individual 4 shows a high level of 'medium cognitive empathy'. Next, the participant changes to 'low cognitive empathy' (CD2) and from then on alternates between these two empathy facets until the participant shows exclusively 'future-self empathy' in the last dilemma (CD4).

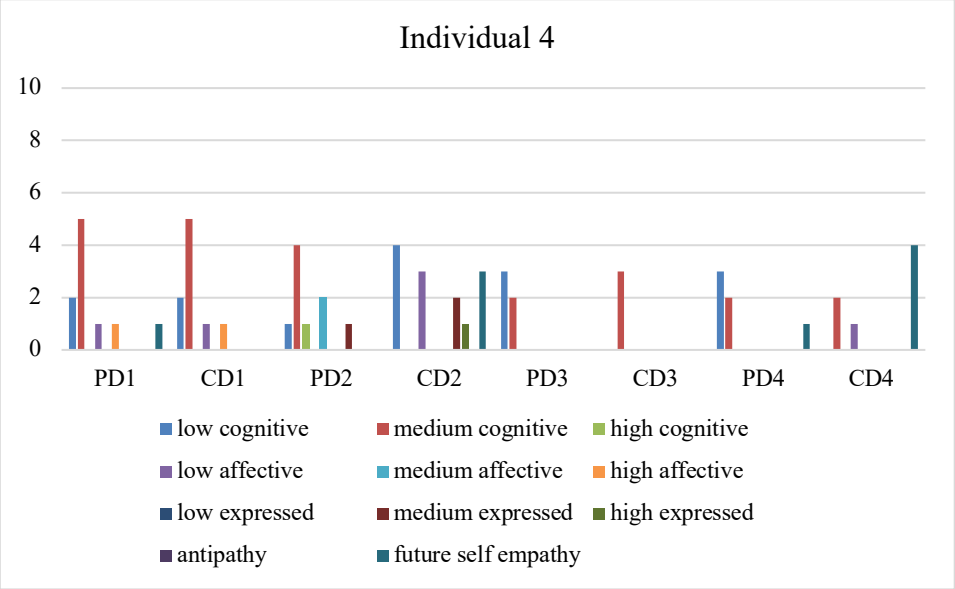

Figure 7. F*requency distribution of empathy facets using mean scores of Individual 4*

4. Discussion

The present study provides a comprehensive insight into intra- and interindividual differences in empathy over time. Overall, this study has shown how diverse individuals

use empathy when faced with different dilemmas. This study has distinguished between four different facets of empathy, namely 1) cognitive empathy, 2) affective empathy, 3) expressed empathy, and 4) future-self empathy. Accordingly, this study is in line with the assumption by Davis (1983) that empathy can be viewed as a multidimensional construct.

Furthermore, it was found that 'cognitive empathy', 'affective empathy', and 'expressed empathy' can be performed in different depths among the participants. Therefore, the study has shown that these empathy facets can be divided into the levels low, medium, and high. With each level, the effort and depth with which a person tried to use empathy to understand how another person feels, thinks, or behaves increased. For example, an individual can use 'low cognitive empathy' to speculate how a person feels or thinks. Whereas 'high cognitive empathy' requires an individual to challenge their own beliefs, assumptions, and knowledge to understand and contextualize another character, their views, and their behavior.

In addition, this study was able to identify a form of 'future-self empathy' as participants imagined themselves in the future as a character in a given dilemma. Unlike the four empathy facets, it was also possible to discover a form of 'antipathy', whereby participants showed an aversion towards either the topicality of the dilemma or the presented characters.

In order to answer the first research question, it can be said that primarily 'low cognitive empathy' and 'moderate cognitive empathy' were applied within this study. This result can be explained by the ToM, as participants mainly attempted to understand the dilemma and attribute mental states to the characters, such as beliefs, thoughts, feelings, knowledge, desires, and intentions. Participants could assume what others want, think, and believe to infer states that are not directly observable. Thus, this ability can be anticipated to predict the behavior of others (Mai et al., 2016; Premack & Woodruff, 1978). One can even further state that participants consciously applied ‘cognitive empathy’ to understand and make sense of a new dilemma. So, by using ‘cognitive empathy’, participants primarily generate a different perspective to understand or interpret a new dilemma (Mai et al., 2016). Therefore, ‘cognitive empathy’ can be seen as a foundational element for social interactions.

However, ‘cognitive empathy’ differs from other empathy facets as it enables a person to distinguish between oneself and a depicted character. Thus, ‘cognitive empathy’ creates distance, which is less present in ‘affective empathy’ as ‘affective

empathy’ requires the participants to emotionally insert themselves into another person (van Dongen, 2020).

Nonetheless, overall little 'high cognitive empathy' was identified, meaning that while participants wanted to explain and understand the dilemma and the characters depicted, they did not challenge their knowledge, norms, values, or beliefs to apply an elaborate form of empathy (Alma & Smaling, 2006).

A possible explanation for this finding is that participants are already stressed due to the constant stream of alarming Covid-19 news that is omnipresent since the beginning of 2020. Accordingly, misguided or too much empathy can lead to "emphatic distress" or "empathy fatigue". Since engaging in higher facets of empathy (e.g., 'high cognitive empathy') drains more resources than less elaborate facets of empathy (e.g., 'low cognitive empathy'), it might be that participants did not want to get too involved in the dilemmas. Thus, it can be considered a form of self-protection, preventing participants from experiencing "empathic distress" (Fisher, 2020). This assumption is corroborated by the fact that 'high affective empathy' and 'high expressed empathy' have also been used to a lesser extent than lower empathy facets. This type of empathy exhaustion has been particularly noticeable in the health sector during the Covid-19 pandemic. Thus, it might be a temporally appropriate explanation to explain these findings since this study started in September 2020.

Nevertheless, it is essential to include other possible explanations for the low engagement in 'high cognitive empathy' in future studies. Accordingly, it would be interesting to know whether the online methodology or the participants' motivation influenced the outcome. In addition, another reason might be that variables such as the type of dilemmas or survey questions selected may not have been challenging enough.

Regarding the second research question, the study showed that there are inter- and intraindividual differences in a person's empathy ability. Participants demonstrated to use different facets of empathy when confronted with a dilemma. Thus, this study showed that it is possible to apply multiple facets of empathy parallel or at least within the same dilemma. This result was confirmed by all four empathy groups to which participants were assigned based on their empathy trajectories. According to Alma and Smaling (2006), a person can combine a set of mental facets (‘affective- and cognitive empathy’) and social facets (‘expressed empathy’) to create a cross-product to optimize one's empathy capacity and make it more efficient. Therefore, one can speculate that the targeted application of several empathy facets brings an advantage to understanding

a situation or a person holistically. In the future, it would also be interesting to learn whether individuals who apply a combination of mental and social types of empathy show a more substantial or enriched type of empathy.

In addition to the parallel use of different empathy facets, this study also revealed that participants used different empathy facets depending on the dilemma they faced. This is an interesting result because each empathy facet has another function. In this context, the empathy facet 'future-self empathy' was particularly salient because the participants used 'future-self empathy' predominantly in the fourth measurement. One explanation that especially 'future-self empathy' increased enormously in the fourth measurement is that some dilemmas might be perceived as more challenging to solve. Seeing oneself as a character in the future can be understood as "pre-experiencing" a future event and ensures that one gains a sense of power and efficacy to comprehend and solve a dilemma (Bohart, 1993). Nevertheless, in the future, it will be essential to discover whether the empathy facet that is applied depends on the content of the dilemma or whether the posed survey questions influenced this result.

Concerning the second research question, another striking result, besides the substantial increase in 'future-self empathy', was that overall, the second collective dilemma showed the highest occurrence of 'low affective empathy', 'medium affective empathy', and 'high cognitive empathy'. In other words, participants cognitively and emotionally empathized the most with the second collective dilemma.

The dilemma shows on the left side of the picture the precarious position of the worker, the rising unemployment rate, as well as unfavorable economic (e.g., airplanes flying over an exploited and depleted piece of land), political (e.g., a politician with a bag of money), and environmental (e.g., destroyed nature) consequences are depicted. On the right side of the picture, green energy and intact nature are shown, however. In the future, it would be worthwhile to investigate whether the frequent occurrence of 'low affective empathy', 'medium affective empathy', and 'high cognitive empathy' was influenced by the design of the dilemma, the topicality of the subject matter, or by the qualitative method used, namely the survey question.

Additionally, the second collective dilemma has shown the greatest variance in responses compared to the other dilemmas. Thus, individuals showed empathy very differently and to a very different extent. Since the dilemma concerns a political, economic, and environmental issue and the participants in this study reside in different countries, it would be essential to explore whether the participants' personal attitudes

and satisfaction towards the political governance style (environmental policy, economic policy, social policy, etc.) of the country had an impact on the level of empathy expressed.

Next, this study has proven that some individuals show a higher degree of empathy than others. Explicitly the fourth group, 'outliers', has shown a high level of empathy. In contrast to the individuals who showed a greater extent of empathy, some individuals showed very little empathy. This was especially confirmed with the third group ('consistent low empathy trajectory'). Consequently, one can say that participants in the third group included reduced alternative possibilities and ways of thinking to make sense of the dilemma compared to the fourth group.

One explanation for this result comes from Warrier et al. (2018). Accordingly, some individuals are more empathetic than others because a significant part of a person's empathy capacity can be attributed to a person's genetics. This would imply that a certain amount of our empathy capacity is determined by our genetics.

However, it is also possible that participants who showed exceptionally high levels of empathy experienced less "empathic distress". Accordingly, they felt less stressed by the content of the dilemmas than other participants. While the low use of empathy may be an adaptation of the participant to protect themself from too much "empathic distress" or "empathic fatigue" (Fisher, 2020). This explanation was described before and may also explain the difference between very empathic participants ('outliers') and less empathic participants ('consistent low empathy trajectory'). In the future, it would be essential to investigate whether the participants' genetics influences these results or whether non-genetic biological factors, such as the level of distress, socialization, upbringing, or education, are responsible for this result.

Regarding the research question, whether empathy increases or decreases when individuals are asked to empathize with different dilemmas, this study shows that especially the third group ('consistent low empathy trajectory') either consistently showed little empathy or even decreased in empathy. Therefore, Nussbaum's (1997) and Samuelson's (2009) assumption that through arts, we can cultivate our imagination, and thus, our empathy capacity can be partly rejected. Within this study, it was therefore not possible to train the empathy capacity of a person with the help of different Covid-19 related moral dilemmas.

However, it would also be worth exploring whether creativity might play a crucial role in interpreting each dilemma, especially since the represented dilemmas

became more fictitious with each measurement. Finally, it is essential to investigate whether the approach selected in this study, namely, to stimulate moral imagination through pictorially presented moral dilemmas to explore an individual's empathy ability, may have limitations that could have influenced this outcome.

4.1 Limitations and Strengths

The performed qualitative analysis is subject to some limitations, which must be considered when interpreting the results. Despite the systematic approach, there is a limitation to the generalization of the results due to the small sample size of 20 participants. A further limitation of this study is that the questions and the scope of the questions per dilemma sometimes differed. For example, in the first dilemma, participants were actively asked to adopt the role of a character in the picture and describe what they would do if they were this person; however, in the seventh dilemma, they were asked to imagine themselves as characters in the presented dilemma and describe their action. This incentive to engage with another person's actions, thoughts, and feelings may have influenced the quality of empathy and the facets of empathy being used ('affective empathy' vs. 'future-self empathy')

Another limitation might be that the researchers' subjectivity influenced the coding process. Although the codes were clearly defined and checked for consistency by two researchers, subjectivity may have still affected the process. Additionally, subjectivity may also have played a factor in the dilemmas presented. Although an artist made the dilemmas, it is possible that the design, the way the dilemmas were visualized, may have influenced the outcome. So, there may have been individual differences in the extent to which the participants were appealed to by design.

Despite the limitations, there are many strengths to this study. Overall, this study was very insightful because empathy research is still in its infancy, and there are few empirical studies. First, it was possible to crystallize different facets of empathy that have not been adequately addressed in the literature before, such as ‘expressed empathy’ and ‘future self-empathy’. In addition, it has been possible to define different intensities of the facets 'cognitive empathy', 'affective empathy', and 'expressed empathy'. These results bring some practical implications, as in the future, one should study empathy as an even broader construct consisting of an affective, cognitive, expressive and future-self component that can be expressed in different intensities.

Furthermore, this study is highly relevant as it proves that there are inter- and intraindividual differences in a person's ability to empathize. It shows that people can consciously use multiple empathy facets to understand a dilemma. In addition, to our knowledge, no study has yet proven that people predominantly use cognitive empathy to understand an action, feeling, and thinking of another character. Although it is a qualitative study with few participants, this scientific work includes different nationalities and age groups, which increases the generalizability.

5. Conclusion

In conclusion, to our knowledge, this is the first study that examines inter- and intraindividual empathy responses to Covid-19 related moral dilemmas. Overall, this study has proven that the empathy facets 'low cognitive empathy' and 'medium cognitive empathy' were used most when asked to engage in Covid-19 related moral dilemmas. Interestingly, findings highlighted that there are inter- and intraindividual differences. Participants showed to apply multiple facets of empathy within the same dilemma and used different empathy facets depending on the dilemma they faced. Furthermore, this study has proven that some individuals show a higher degree of empathy than others.

Consequently, this study has contributed significantly to the understanding of empathy and provides a sound basis for future projects. This work has shown that there are still many open questions in empathy research that need to be explored. In the future, it is important to explore possible influencing factors. Precisely because the dilemmas presented addressed the Covid-19 pandemic, it is vital to explore whether events such as the vaccination situation or federal Covid-19 regulations (such as lockdowns, reporting on Covid 19) influenced the quality of empathy used. Another future project is to find out if there are design differences. In this study, only black and white drawings of Covid-19 related dilemmas were used. Color drawings, photos, or collages of Covid-19 related dilemmas may yield new results.

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Appendix A

Figure 1. *Drawing showing the funeral situation in the times of Covid-19*

Figure 2. *Drawing depicting the current home office situation*

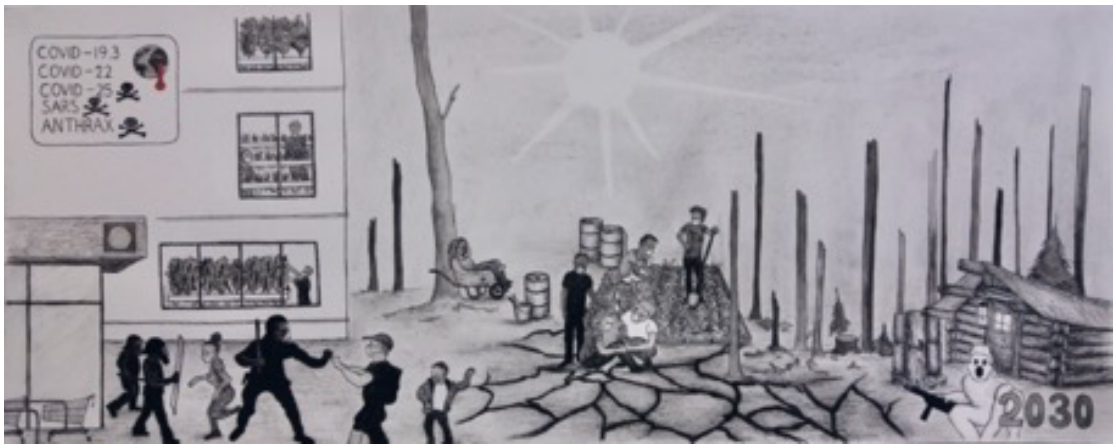

Figure 3. *Drawings depicting the year 2030*

Table 1. *First survey questions for personal dilemma 1 and collective dilemma 1*

Moral Dilemmas Survey Questions: 1st Set
21 September 2020

Personal Moral Dilemma:

1. Could you describe what is happening in the picture? What is the situation? Who are the characters? What do they do, feel or think?
2. What are the moral dilemmas you think the characters are facing in this picture? Try to make explicit as many moral dilemmas as you can.
3. Given the moral dilemmas you've identified, what should the characters do in this situation? Try to imagine as many morally acceptable options as you can.
4. Suppose you were to attend a funeral during the coronavirus crisis, what do you think you should do? Please make explicit the reasons for your choice.
5. Suppose you were either a very close family member of the deceased person or a mere acquaintance, what do you think you should do then? Please make explicit the reasons for your choice.

Collective Moral Dilemma:

1. Could you describe what is happening in the picture? What is the situation? Who are the characters? What do they do, feel or think?
6. Suppose you were appointed advisor to the government on a policy regarding remote education and homeschooling

Appendix B

Table 4

Paired samples test comparison between first measurement and second measurement

	Paired Differences				
	95% Confidence Interval of the Difference				
	Lower	Upper	t	df	Sig. (2-tailed)
M1lc - M2lc	0.01	2.59	2.11	19	.048
M1mc - M2mc	-0.12	2.42	1.89	19	.074
M1hc - M2hc	-1.18	-0.02	-2.18	19	.042
M1la - M2la	-0.45	1.05	0.84	19	.410
M1ma - M2ma	-2.07	-0.43	-3.21	19	.005
M1ha - M2ha	0.22	0.98	3.27	19	.004
M1le - M2le	-0.26	0.56	0.77	19	.453
M1me - M2me	-0.65	0.25	-0.94	19	.359
M1he - M2he	-0.15	0.15	0.00	19	1.00
M1anti - M2anti	-0.30	0.30	0.00	19	1.00
M1futureself - M2futureself	-0.87	0.27	-1.10	19	.285

M1 = first measurement; M2 = second measurement; lc = low cognitive empathy; mc = medium cognitive empathy; hc = high cognitive empathy; la = low affective empathy; ma = medium affective empathy; ha = high affective empathy; le = low expressed empathy; me = medium expressed empathy; he = high expressed empathy; anti = antipathy

Table 5

Paired samples test comparison between second measurement and third measurement

	Paired Differences				
	95% Confidence Interval of the Difference				
	Lower	Upper	t	df	Sig. (2-tailed)
M2lc - M3lc	-1.04	0.94	-0.11	19	.917
M2mc - M3mc	-2.30	0.40	-1.47	19	.158

M2hc - M3hc	0.16	1.14	2.80	19	.012
M2la - M3la	-0.51	0.61	0.19	19	.853
M2ma - M3ma	1.09	2.51	5.34	19	.001
M2le - M3le	-0.46	0.46	0.00	19	1.00
M2me - M3me	-0.11	0.91	1.63	19	.119
M2he - M3he	-0.15	0.15	0.00	19	1.00
M2anti - M3anti	-0.50	0.30	-0.53	19	.606
M2futureself - M3futureself	0.54	1.46	4.60	19	.001

M2 = second measurement; M3 = third measurement; lc = low cognitive empathy; mc = medium cognitive empathy; hc = high cognitive empathy; la = low affective empathy; ma = medium affective empathy; ha = high affective empathy; le = low expressed empathy; me = medium expressed empathy; he = high expressed empathy; anti = antipathy

Table 6

Paired samples test comparison between third measurement and fourth measurement

	Paired Differences				
	95% Confidence Interval of the Difference				
	Lower	Upper	t	df	Sig. (2-tailed)
M3lc - M4lc	-0.34	1.54	1.34	19	.198
M3mc - M4mc	0.79	2.91	3.67	19	.002
M3hc - M4hc	-0.05	0.55	1.75	19	.096
M3la - M4la	-0.48	0.78	0.50	19	.625
M3ma - M4ma	-0.96	0.06	-1.83	19	.083
M3le - M4le	-0.03	0.73	1.93	19	.069
M3me - M4me	-0.62	0.22	-1.00	19	.330
M3he - M4he	-0.42	0.12	-1.14	19	.267
M3anti - M4anti	-0.27	0.47	0.57	19	.577
M3futureself - M4futureself	-2.58	-1.32	-6.43	19	.001

M3 = third measurement; M4 = fourth measurement; lc = low cognitive empathy; mc = medium cognitive empathy; hc = high cognitive empathy; la = low affective empathy; ma = medium affective empathy; ha = high affective empathy; le = low

expressed empathy; me = medium expressed empathy; he = high expressed empathy; anti = antipathy

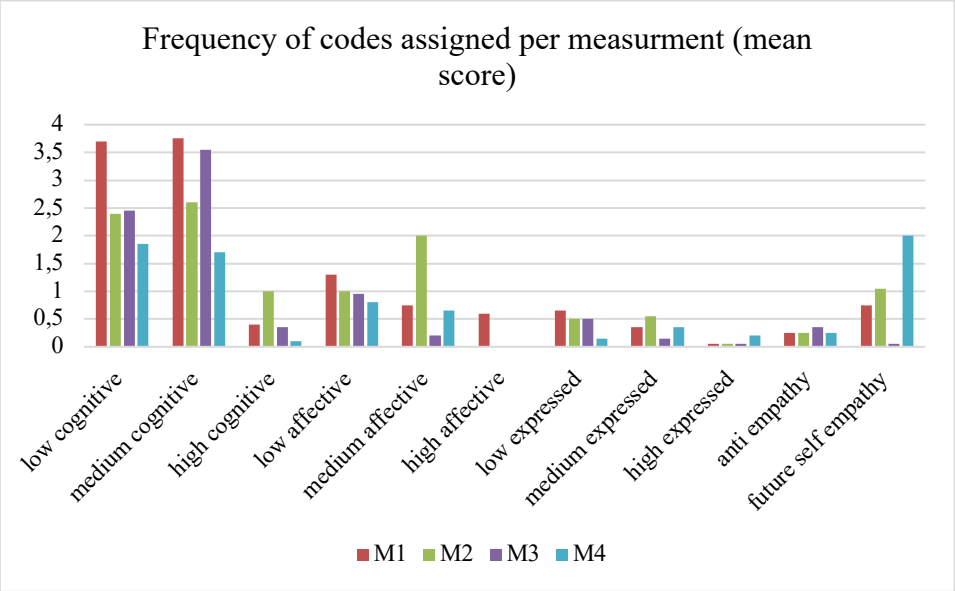

Figure 1. *Frequency distribution of empathy facets using mean scores of the four measurements*

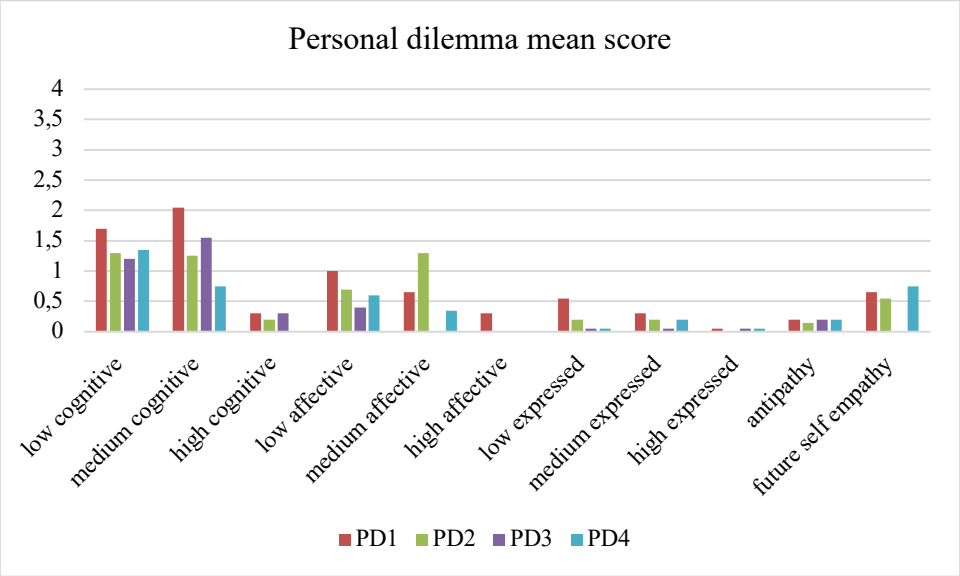

Figure 2. *Frequency distribution of empathy facets using mean scores of the personal dilemmas*

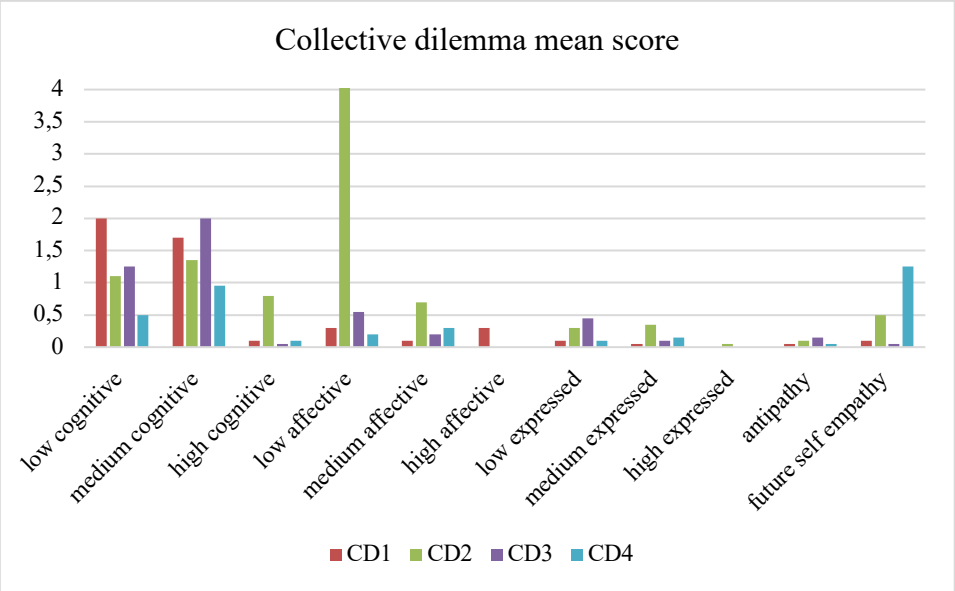

Figure 3. *Frequency distribution of empathy facets using mean scores of the collective dilemmas*

Group 1: consistent low empathy trajectory with some peaks

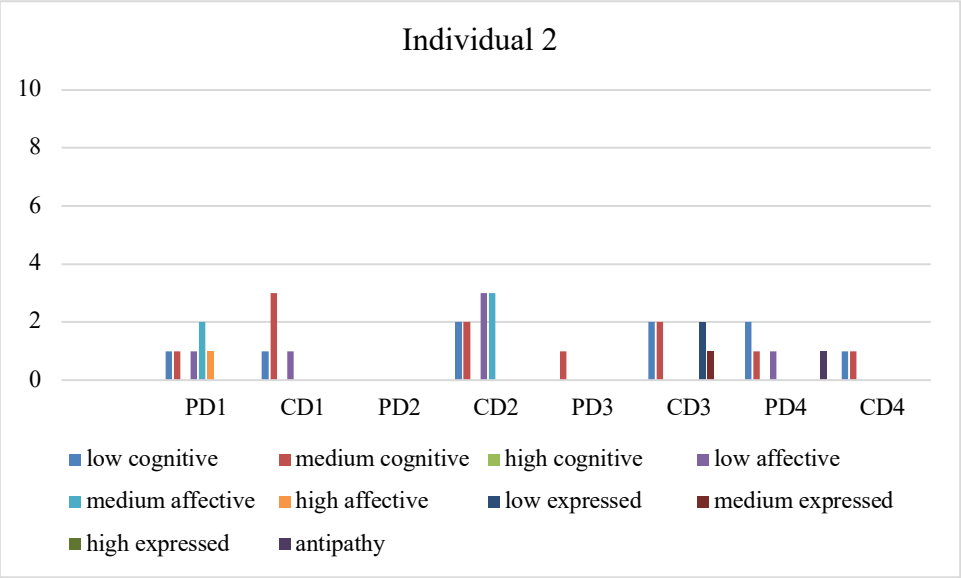

Figure 8. F*requency distribution of empathy facets using mean scores of Individual 2*

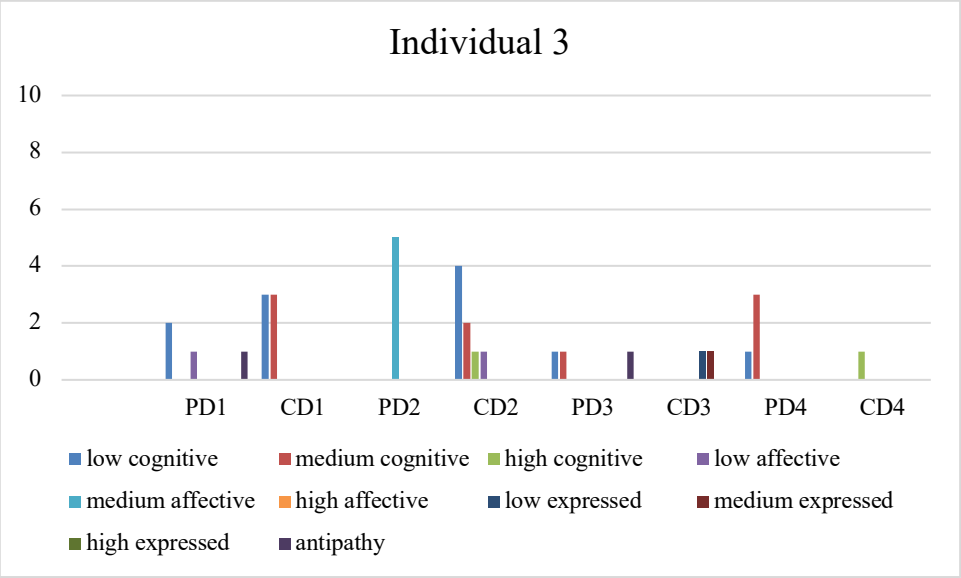

Figure 9. F*requency distribution of empathy facets using mean scores of Individual 3*

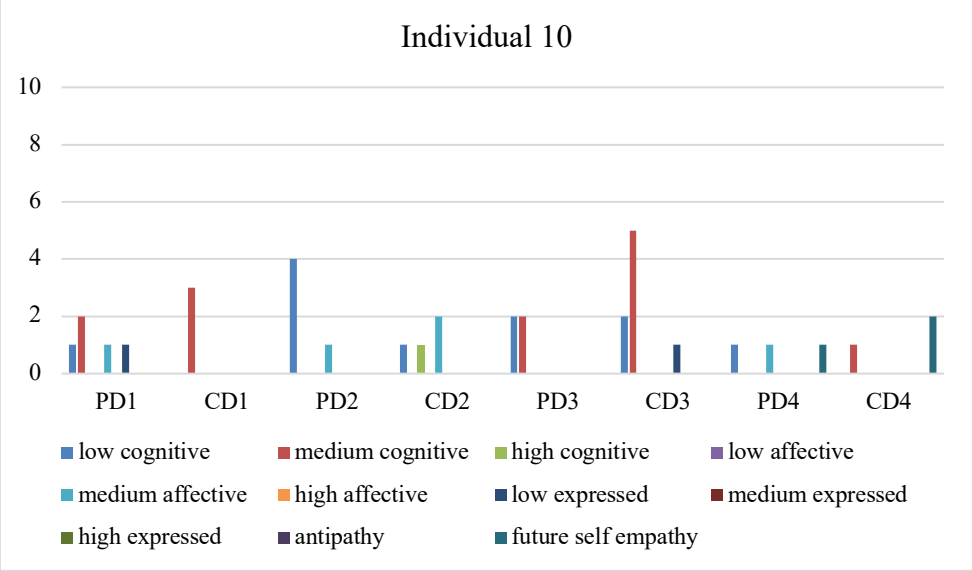

Figure 10. F*requency distribution of empathy facets using mean scores of Individual 10*

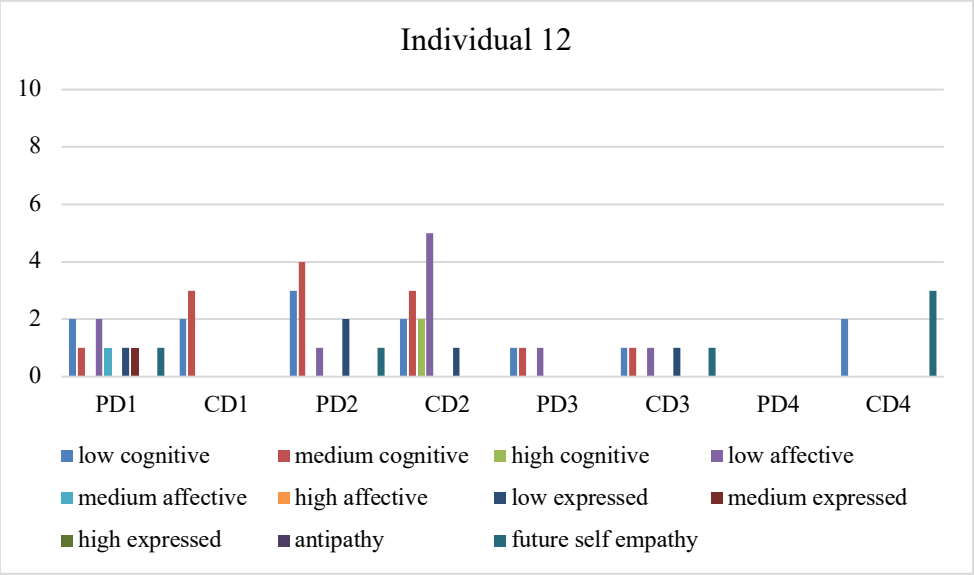

Figure 11. F*requency distribution of empathy facets using mean scores of Individual 12*

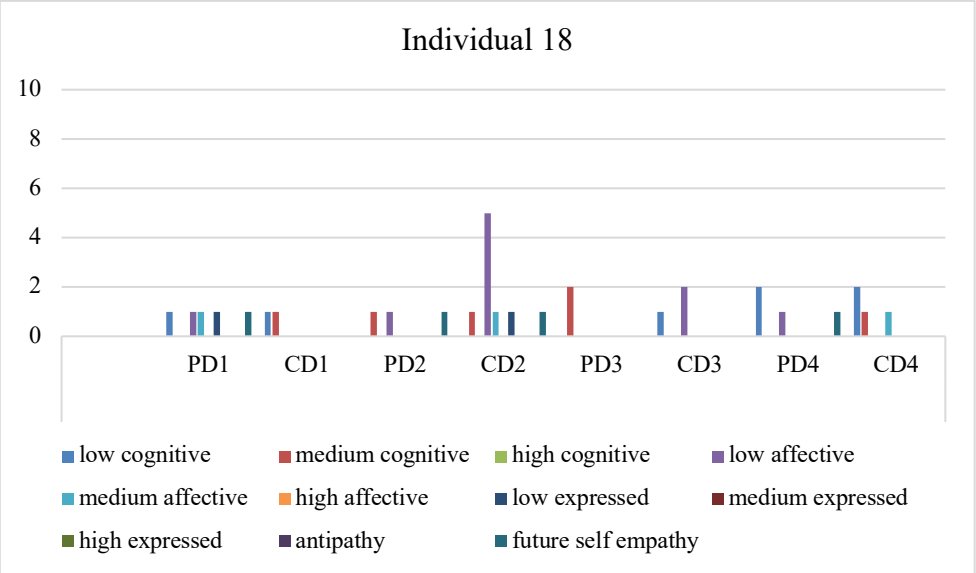

Figure 12. F*requency distribution of empathy facets using mean scores of Individual 18*

Group 2: bell-shaped course

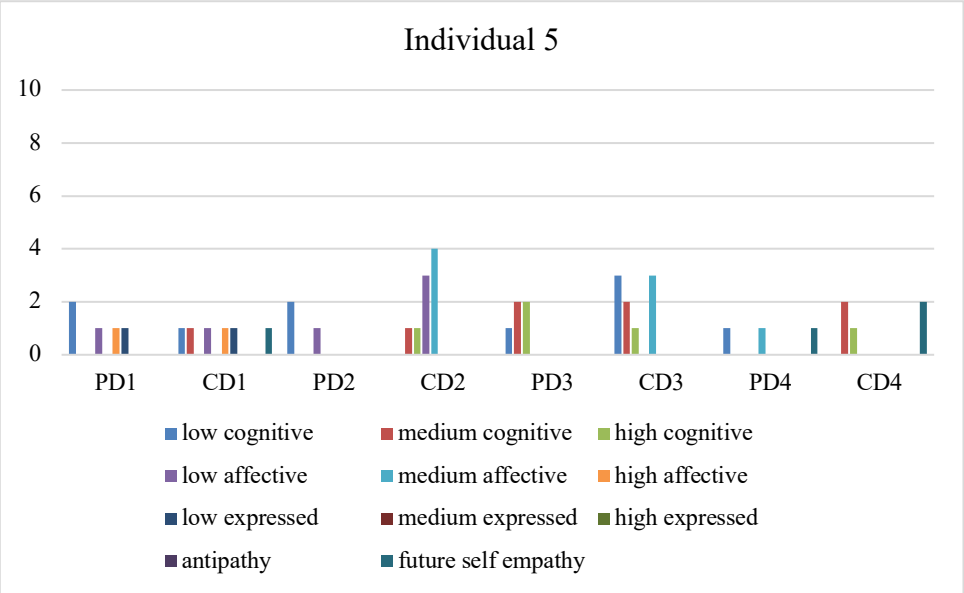

Figure 13. F*requency distribution of empathy facets using mean scores of Individual 5*

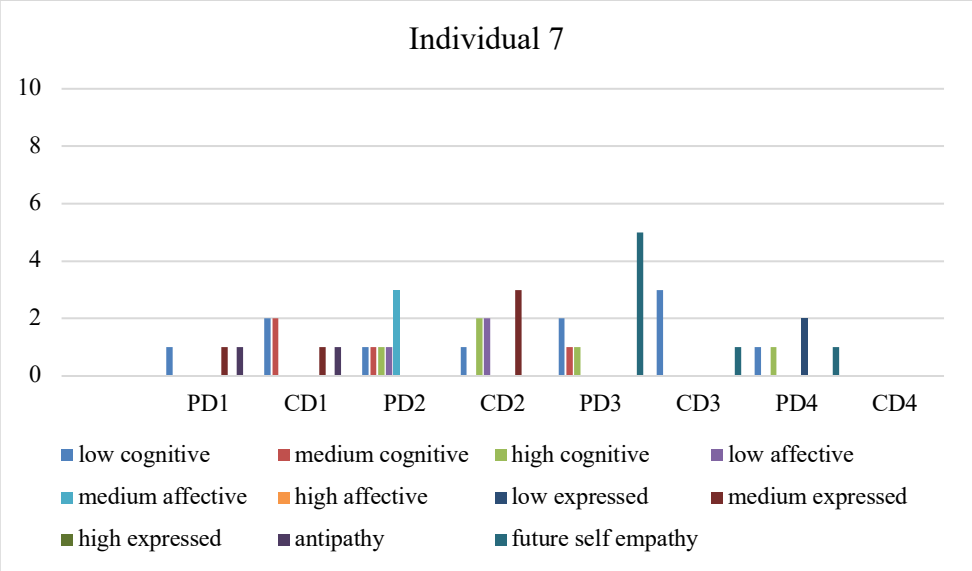

Figure 14. F*requency distribution of empathy facets using mean scores of Individual 7*

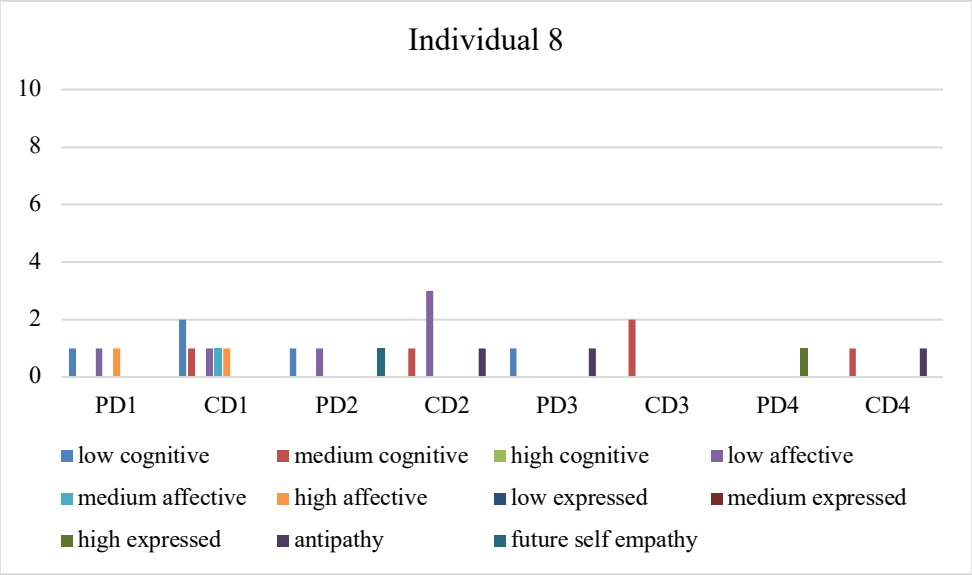

Figure 15. F*requency distribution of empathy facets using mean scores of Individual 8*

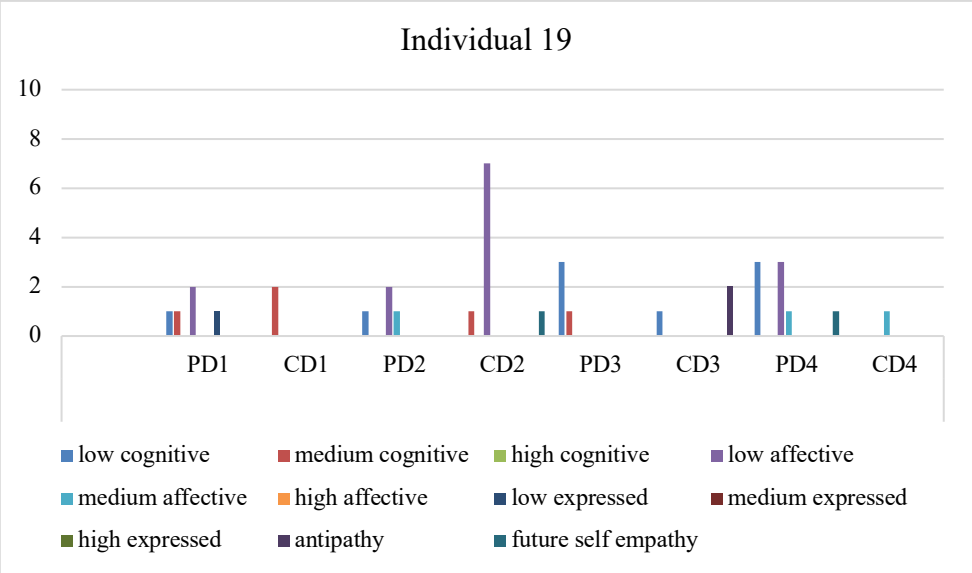

Figure 16. F*requency distribution of empathy facets using mean scores of Individual 19*

Group 3: consistent low empathy trajecto

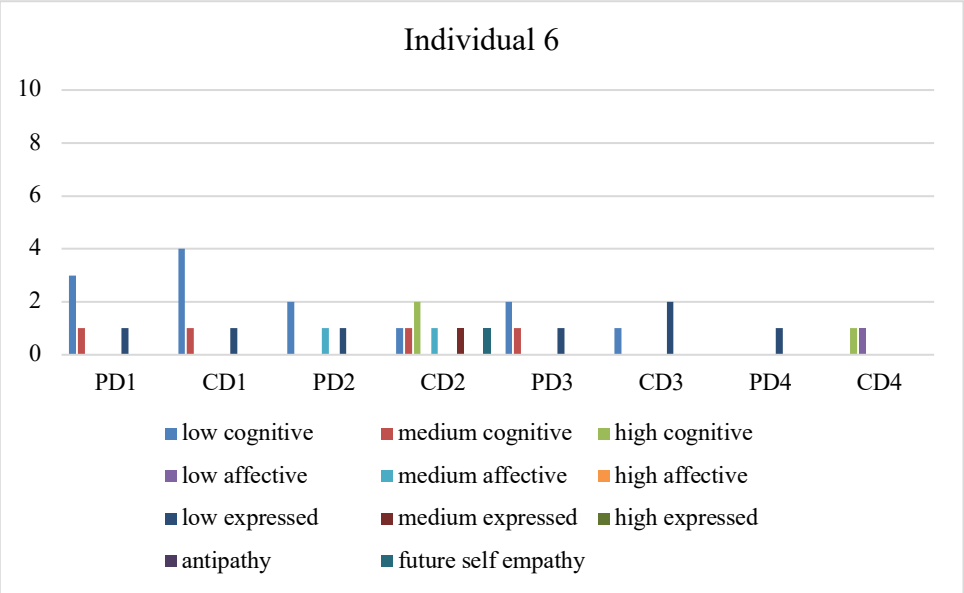

Figure 17. F*requency distribution of empathy facets using mean scores of Individual 6*

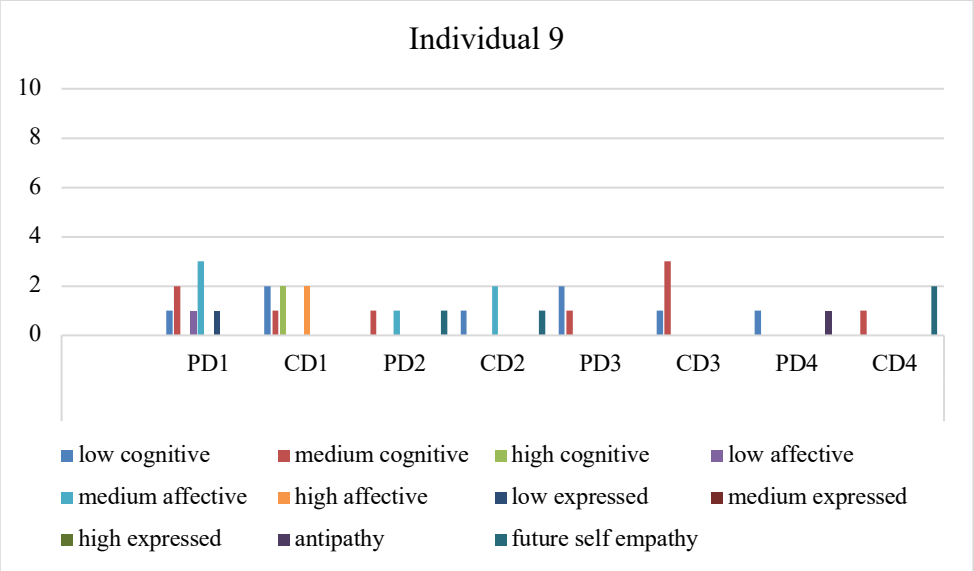

Figure 18. F*requency distribution of empathy facets using mean scores of Individual 9*

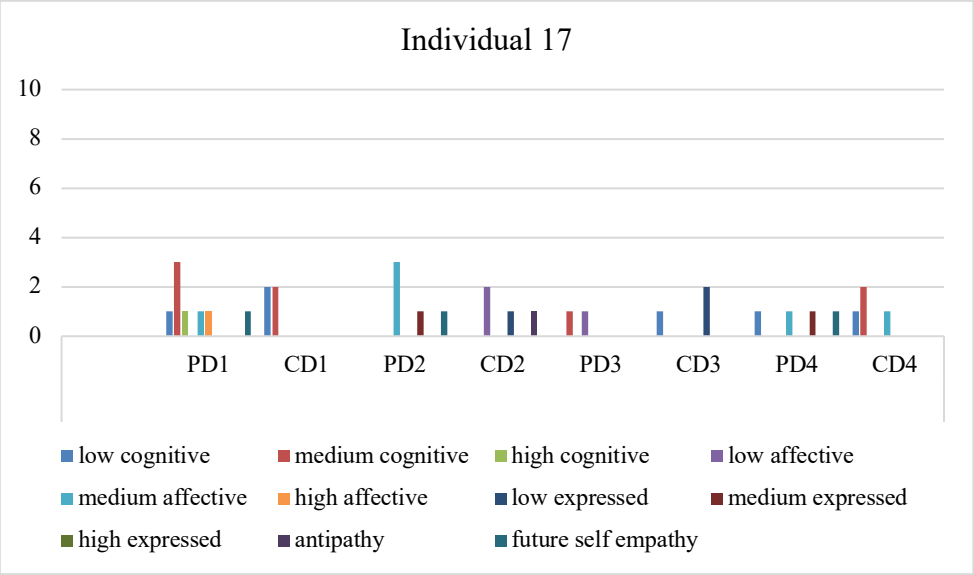

Figure 19. F*requency distribution of empathy facets using mean scores of Individual 17*

Group 4: outliers with increased empathy capacity

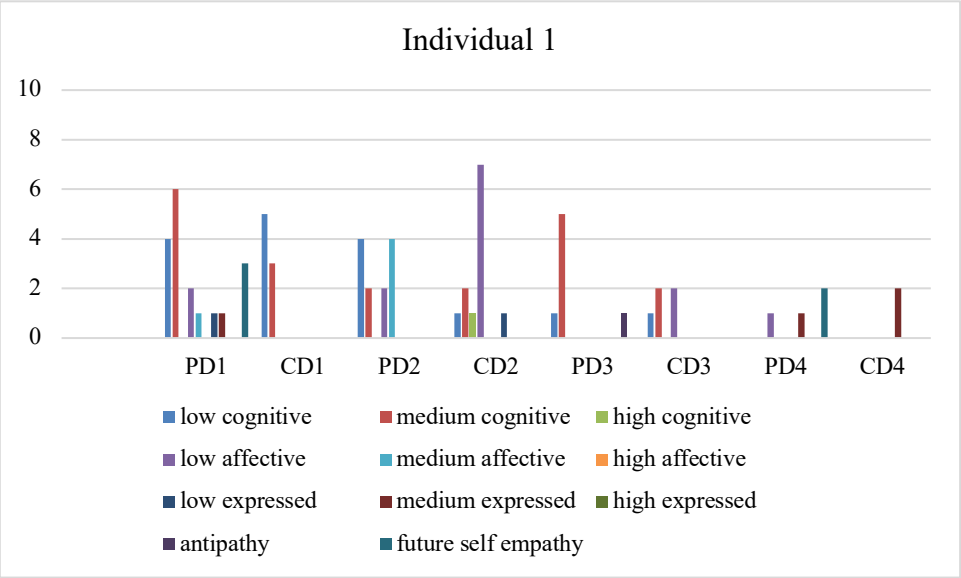

Figure 20. F*requency distribution of empathy facets using mean scores of Individual 1*

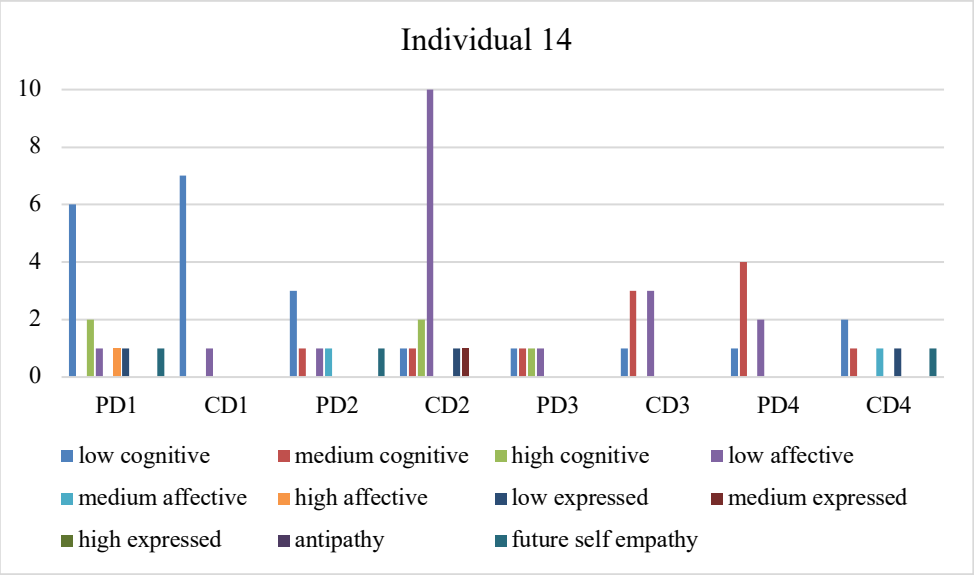

Figure 21. F*requency distribution of empathy facets using mean scores of Individual 14*

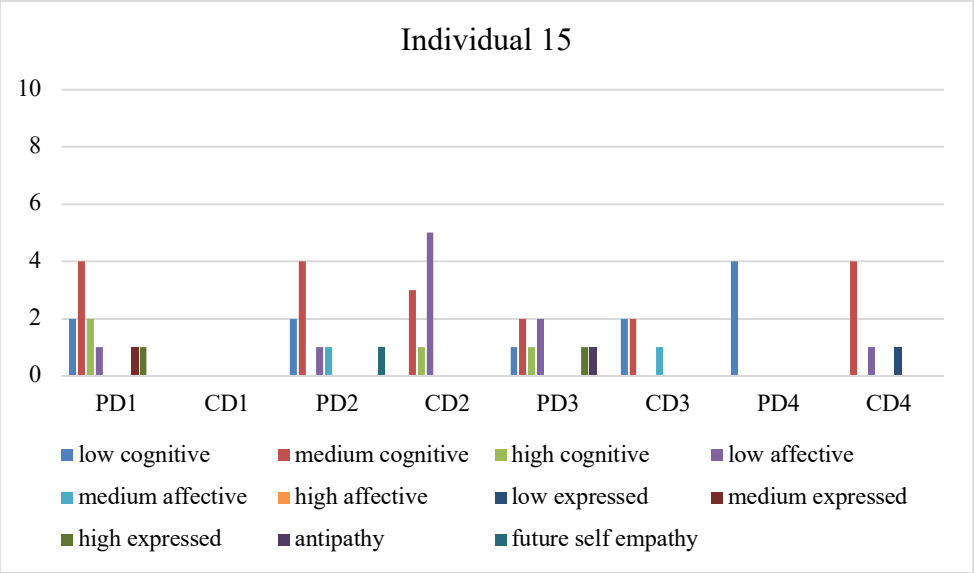

Figure 22. F*requency distribution of empathy facets using mean scores of Individual 15*

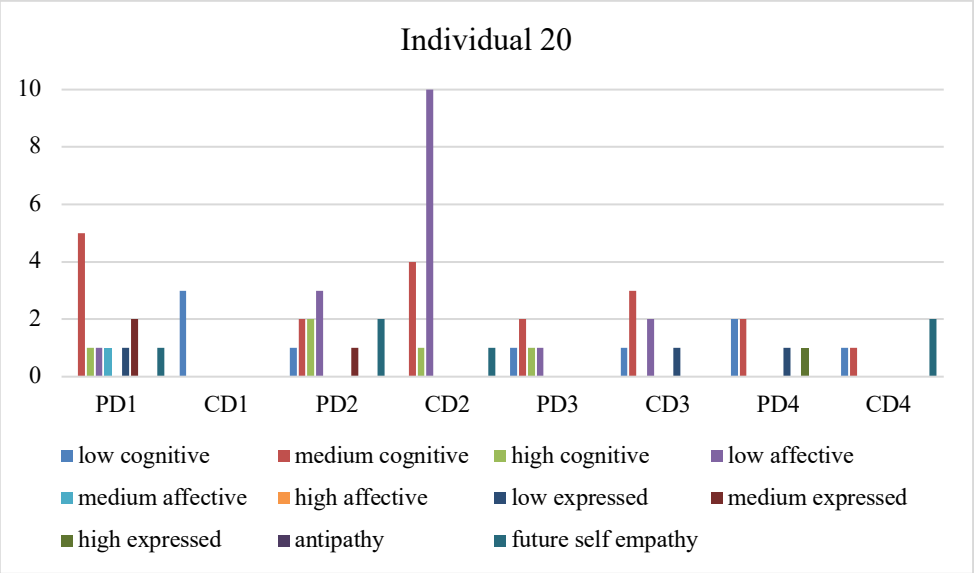

Figure 23. F*requency distribution of empathy facets using mean scores of Individual 20*